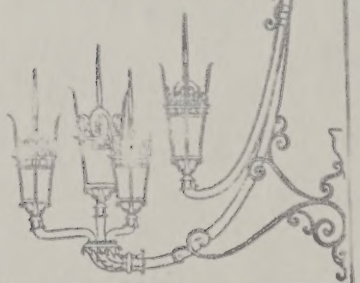

City of Boston
Town of Brookline

Phase 1 Muddy River Flood Control, Water Quality and Habitat Enhancement, and Historic Preservation Project

Volume 5
Appendix F Sediment Characterization
Appendix G Water Quality

December 2001

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In Association with:

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Appendices

Appendix F

APPENDIX F

SEDIMENT CHARACTERIZATION

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Section 1
Introduction

1.1 Rationale and Approach

This report has been prepared to present the findings of sediment sampling conducted along the Muddy River system. The characterization of sediments is part of the Muddy River Restoration Project that could potentially include the dredging of the river, modifications to culverts, and other measures to address the following objectives:

- mitigate flooding;
- improve upon water quality;
- enhance the aquatic and riparian habitat;
- preserve landscape and historic resources; and
- institute best management practices in the Muddy River watershed.

This work is one element of the extensive field analyses necessary to support the Environmental Impact Report/Environmental Assessment and engineering design for the Project. A locus plan that illustrates the Muddy River system is provided as Figure F1-1. From its source at Jamaica Pond, the Muddy River flows north through three interconnected ponds (i.e., Ward's, Willow and Leverett Pond), from Leverett Pond to Park Drive (referred to as the Riverway), from Park Drive to Ipswich Street (referred to as the Back Bay Fens), and the last reach that extends to the Charles River (referred to as the Charlesgate Area). For the purpose of this report, the results and discussions for each of the areas will begin with the further-most downstream location of the Charlesgate area to the upstream location of Ward's Pond. The sampling plan used to conduct the field characterization was based on the following:

- the results of previous investigations;
- visual observations of the Muddy River system; and
- the locations of drains, discharge points and above-ground deposits (e.g., sand bars) expected to be dredged that are located along the Muddy River.

Sample locations were identified along the proposed channel centerline to obtain representative samples and to define stratification within the material to be dredged. The number of samples proposed for each area shown on Figure F1-1 was based on the testing frequency required by the landfill disposal facilities. The sample locations, frequency of testing and the parameters for analysis were provided in a Sediment Quality Testing Plan that has been reviewed and approved by the Department of Environmental Protection (DEP). The Sediment Quality Testing Plan and related DEP correspondence is provided as Attachment F-1.

The data collected from the field investigation, combined with the results of the previous environmental studies, have been used to determine the suitability of dredged materials for various disposal options. In addition, the data collected may be

Figure F1-1
Locus Plan
Muddy River Restoration Project

900 0 900 1800 Feet

- ACOE 2000
- USGS 1997
- ACOE 1996
- ACOE 1995
- ACOE 1992
- CDM 2000

CDM Camp Dresser & McKee Inc.

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used to assess the environmental quality of the native sediment that would remain after dredging.

1.2 Program Overview

The field characterization program was conducted from July 18, 2000 through October 19, 2000, with the intent of obtaining information to define subsurface conditions at the locations where dredging is proposed to take place. Sediment samples were collected from 139 locations along the Muddy River system. Listed below, by area, is the total number of locations sampled.

Charlesgate Area	6 locations
Back Bay Fens	60 locations
Riverway	36 locations
Leverett Pond	26 locations
Willow Pond	5 locations
Ward's Pond	6 locations

The proposed number of samples and the parameters for analysis for each area that was presented in the sampling plan are listed in Table F1-1. Up to three stratified samples which best represented specific strata were collected at each location. Two samples were collected from the fill material, with the first sample taken from the surface of the sediment layer and the next sample collected from an interval based on visual or olfactory observations. A third sample was collected from the native sediments underlying the fill materials.

Geotek Engineering, Inc. (Geotek) of Framingham, Massachusetts was subcontracted to perform drilling services. The sampling was conducted from a barge, by boat or on foot depending on the depth of water and the sediment characteristics. Sample locations were surveyed by Global Positioning System (GPS) using a Trimble Asset Surveyor.

1.3 Field Investigation Procedures

Samples were collected from a tripod-mounted, engine driven hollow stem auger using standard drilling techniques. The samples were collected at 2-ft depth intervals to native material. Depending on the area, native material was encountered from 6 to 10 feet below the top of the sediment layer.

Boring logs were prepared for each sediment sample location, with the following information recorded:

- Sampling personnel;

TABLE F1-1
SAMPLING FREQUENCY AND PROPOSED PARAMETERS FOR ANALYSIS

Muddy River Restoration Project

Area of Study	Proposed Excavation Volume	Existing Samples	Proposed Samples	Sampling Frequency (samples/yd^3)	Analyses
Ward's Pond	19,340 yd^3	9	15 (odd-numbered)	496	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			15 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Willow Pond	9,670 yd^3	6	7 (odd-numbered)	484	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			7 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Leverett Pond	21,788 yd^3	8	39 (odd-numbered)	253	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			39 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Riverway	30,000 yd^3	9	60 (odd-numbered)	238	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			57 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Back Bay Fens Area (includes Charlesgate Area)	91,102 yd^3	12	198	434	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			20 composite samples		paint filter liquid test

NOTE:

TCLP testing will be conducted on samples where any organic or inorganic contaminant exceeds the theoretical TCLP threshold.

- Weather conditions;
- Date and time of field activities;
- Sample method;
- Position and depth of sample;
- Depth of overlying water;
- Field screening measurements;
- Instrumentation used and any deviations from the proposed methodology;
- Visual/olfactory observations; and
- Physical description of the material and geologic classification.

The logs for each sediment location are provided in Attachment F-2.

Samples were analyzed for the parameters listed on Table F1-1. Samples with concentrations above which a 100% leaching of the metal/organic constituent in the sample would exceed the regulatory level in the sample leachate were also subjected to the TCLP analysis. Representative samples from each area were composited and subjected to the paint filter test. Several samples were analyzed for nitrates and total phosphorus as well. Quality Assurance/Quality Control (QA/QC) samples, that included field blanks and duplicate samples, were also collected. Samples were stored in coolers on ice and either picked up on the day of sampling or the following day. The samples were submitted for analysis to the Toxikon Corporation Laboratory or AMRO Environmental Laboratories Corporation.

The results of the field characterization, including the results of previous investigations conducted by others, are discussed in Section 2 by area in terms of the types and concentrations of target compounds. Section 3 provides an evaluation of the environmental quality of the sediments and identifies the expected acceptable disposal options for the dredged sediment.

Section 2
Analytical Results and Discussion

2.1 Introduction

This section of the report presents the analytical results obtained from the sampling program conducted by CDM as well as a summary of previous sampling events conducted by others. The results are primarily discussed in terms of concentrations of constituents compared with the DEP Lined and Unlined Landfill Reuse Allowable Contaminant Levels for Soil Criteria. The results of CDM's investigation are provided in Subsection 2.3, and include a brief discussion of the physical sediment characteristics observed for each area. The results are also discussed in terms of correlation with previous environmental studies and to possible sources of contamination.

2.2 Previous Field Investigations

Several environmental investigations have been conducted on sediments in the Muddy River. A summary of the results from the following investigations is provided in this subsection:

- Boston Water and Sewer Commission, 1992;
- U.S. Army Corps of Engineers, 1992;
- U.S. Army Corps of Engineers, 1995;
- U.S. Army Corps of Engineers, 1996;
- U.S. Geologic Survey, 1998;
- Town of Brookline, 1998;
- U.S. Army Corps of Engineers, 2000; and
- CDM, 2000.

Overall the results showed elevated levels of lead, mercury, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). Typically the concentrations of the analytes were higher in the top sediment layer with the highest concentrations collected in samples from the Riverway and the Back Bay Fens. As expected, the highest concentrations were found near drain discharge points. The results of these investigations are discussed in the following paragraphs. The results of samples analyzed for total petroleum hydrocarbons (TPH) by Method 418.1 have not been compared to the DEP criteria since the naturally occurring substances and fine particulate that are generally found in sediment present interference to the TPH method that could result in positive biased values. Note that the sampling program conducted by CDM replaced the TPH method with the extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH) analyses. Tabulated analytical results and figures that show sample locations for each of the investigations discussed are provided in Attachment F-3.

The results for sediment samples collected from the Muddy River conduit are presented in a report prepared for the Boston Water and Sewer Commission (Anderson-Nichols and Co., Inc., 1992). Sediment samples were collected from nine locations along the conduit beginning at the Brookline Avenue Gate House and concluding at Deerfield Street near the Charles River. The average depth of the sediment in the conduit was approximately three feet.

The samples were tested for leachability of organic and inorganic parameters as measured by the Toxicity Characteristic Leaching Procedure (TCLP). The TCLP results for the organic constituents were all below the detection limits. The results of the TCLP testing on metals showed concentrations of lead above the federal regulatory limit of 5 mg/L. The samples above 5 mg/L were collected upstream of the Massachusetts Turnpike, at the Kenmore Square siphon structure and at Deerfield Street near Kenmore Square.

Samples were also analyzed for petroleum hydrocarbons, oil and grease, polychlorinated biphenyls (PCBs), reactivity (cyanide and sulfide), and the paint filter test. The concentrations of petroleum hydrocarbons ranged from 220 mg/kg at the Brookline Avenue Gatehouse to 69,500 mg/kg under the Massachusetts Turnpike. The results of the oil and grease analysis were similar in range to the results reported for petroleum hydrocarbons. The results of the PCB analysis were all below 2 mg/kg. Reactive cyanide was found above the regulatory limit of 250 mg/kg in three of the nine samples analyzed. These samples were collected at the Brookline Avenue Gatehouse (660 mg/kg), upstream of the Massachusetts Turnpike (320 mg/kg) and under the Massachusetts Turnpike (328 mg/kg). The paint filter test yielded free liquid in each of the samples.

In June of 1992, sediment samples were collected along the Riverway and the Back Bay Fens by the U.S. Army Corps of Engineers (ACOE). Sediment cores were taken to a depth of 2 feet. Samples were analyzed for metals, petroleum hydrocarbons and PCBs. Select samples were also analyzed for semivolatile (SVOC) and volatile organic compounds (VOCs). Elevated levels of PAHs (total PAHs of 264 mg/kg) were found in a sample collected near the Tannery Brook drain. Concentrations of PCBs above 2 mg/kg were found in samples collected near the Longwood Avenue drain (3.6 mg/kg) and near Boston Gatehouse No. 2 (2.6 mg/kg). The results of the SVOC analysis showed low levels of dichlorobenzenes (0.1 to 0.32 mg/kg), methylphenols (0.1 to 0.44 mg/kg) and phthalates (0.09 to 20 mg/kg). The results of the VOC analysis showed trace to low levels of acetone, carbon disulfide, methylene chloride, and 2-butanone (all compounds that can be attributed to laboratory artifacts), as well as toluene and ortho-xylene.

Lead at concentrations above 1,000 mg/kg was found at five of the 15 locations sampled. The highest concentration of lead at 2,100 mg/kg was found in a sample collected near the Longwood Avenue drain. Elevated concentrations of mercury (3.2 mg/kg) were also found in this sample. The highest concentration of mercury was found in a sample collected near the Emmanuel College drain overflow at a concentration of 6.4 mg/kg.

In 1995, five samples were collected by the ACOE from Leverett Pond, the Riverway and the Back Bay Fens. Samples were analyzed for petroleum hydrocarbons, metals, PAHs, PCBs, pesticides, and total organic carbon (TOC). Total PAHs were found above the DEP landfill reuse levels at each of the locations except in the sample collected from the Back Bay Fens. The total PAH concentrations ranged from 83 mg/kg to 240 mg/kg. The highest concentration of PAHs was found downstream of the Tannery Brook drain. Lead was found at a concentration of 1,600 mg/kg in a sample collected near the inlet of Leverett Pond. The results of the other analyses were below the DEP landfill reuse levels.

In 1996, seven sediment core samples were collected by the ACOE. The cores extended to depths of 40 to 60 inches and a sample was collected from the top and the bottom of each core. The samples were analyzed for total petroleum hydrocarbons, PCBs, cyanide, and lead. The analytical results showed levels of lead and PCBs in excess of the DEP levels for reuse at landfills. Lead was found above 1,000 mg/kg in samples collected from four of the seven locations sampled. The concentration of lead in the top samples ranged from 82 mg/kg to 2,000 mg/kg, and the bottom samples ranged from 220 mg/kg to 1,600 mg/kg. The TCLP results from two sample locations in the Back Bay Fens were above the regulatory level of 5 mg/L at concentrations of 5.4 mg/L and 6 mg/L. Typically the concentrations of the analytes tested were higher in the top 24-inch samples and in samples collected from the Back Bay Fens area.

In 1998, the U.S. Geologic Survey published screening level data on the sediments from the Back Bay Fens, Riverway and Leverett Pond. Sediment samples were collected from 15 locations and analyzed for total petroleum hydrocarbons, PAH compounds, PCBs, pesticides, total organic carbon, metals, TCLP metals, grain size, and percent moisture. The samples were collected at depths ranging from 6 inches to 78 inches. The results were similar to those observed during the 1996 investigation. The concentrations were generally higher in samples collected from the Back Bay Fens area and lower in concentration in samples collected from the Riverway section. The data indicated elevated levels of petroleum hydrocarbons, lead, PAHs, and PCBs.

In 1998, the Town of Brookline collected sediment and surface water samples in response to a release of petroleum hydrocarbons to Willow Pond. Sediment samples were collected from the rim of the Pond on the right side, left side and outlet of the Pond, and surface water samples were collected from near the inlet, middle and outlet of the Pond. The samples were analyzed for EPH. Elevated concentrations of the aliphatic hydrocarbon ranges were found in the sample collected from the outlet of Willow Pond. The highest concentrations of PAHs (total PAHs 16.3 mg/kg) were found in a sample collected from a location near the outlet to the Pond. The results for samples collected from surface water were below the detection limits. Willow Pond is a DEP listed site (RTN 3-3224) and response activities are on going by the Town of Brookline to address the recurring sheen and petroleum odors.

On April 24, 2000, the ACOE collected sediment samples at three locations from Ward's Pond and at two locations from Willow Pond. Samples were collected from

two depth intervals at each location. The samples collected were analyzed for metals, including the TCLP analysis for lead, PAHs, PCBs, TPH, and pesticides. The results of samples collected from Ward's Pond are generally lower compared to the other areas within the Muddy River system, and were below the DEP landfill reuse levels.

The results of samples collected from Willow Pond generally showed higher concentrations in the samples collected at depth. The total of the individual PAH compounds is above 100 mg/kg in the deeper samples at both locations. The distribution of the individual PAH compounds is similar in each of the four samples. Sheen and petroleum odors were noted during sample collection. Excluding PAHs, the concentrations of the other parameters analyzed were below the DEP landfill reuse levels.

2.3 Data Presentation and Discussion

This subsection presents the results for sediment samples collected by CDM in support of the Boston Parks and Recreation Commission and Town of Brookline's effort to complete the Environmental Impact Report. Results are discussed by area. CDM evaluated the data based on four possible disposal options of In-State for reuse at unlined and lined landfills, Out-of-State landfills or at a hazardous waste landfill facility. For each area, two figures are provided, one that shows the locations of samples collected from fill material and one for the native material. Sample locations from previous investigations are also included on the figures. Summary tables for the target compounds are provided in Attachment F-4. A list of the samples, depth collected and the parameters analyzed is also provided in Attachment F-4.

2.3.1 Charlesgate Area

Sediment Characteristics

The borings advanced in the Charlesgate area were generally completed to a depth of ten feet below the top of sediment or upon encountering native material. The material encountered during the advancement of these borings consisted of varying thickness (4 to 8 ft) of a soft, black, organic silt layer, intermixed with fine to coarse sand and gravel. Small amounts of brick, wood, glass, and concrete were also observed within the organic silt layer. The native material underlying the organic silt layer was typically observed at four to eight feet below the top of the sediment. Native material consists of grey, loose to medium dense, fine to medium sand with varying amounts of fine gravel and silt. Traces of shell fragments were also observed within the native material. Petroleum odors were noted at several depth intervals at boring location CG-SED-4.

Sediment Analytical Results

Collectively, the analytical results of the sampling conducted in the Charlesgate area were lower in concentration than the other areas. The results for samples collected from this area were all below the DEP landfill reuse levels. The locations of the Charlesgate area samples are shown on Figure F2-1A for the samples of fill and

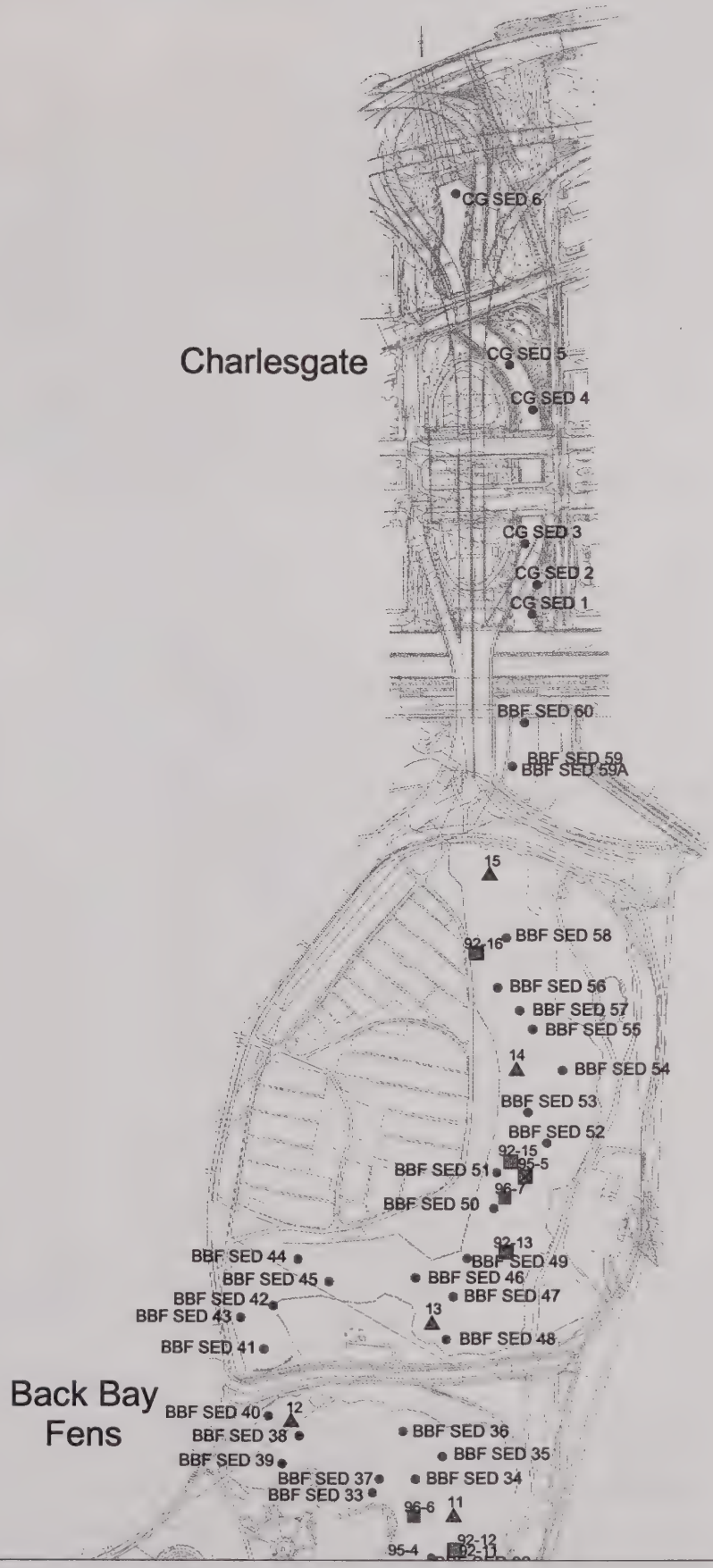

Figure F2-1A
Charlesgate and
Back Bay Fens Area
Fill Material

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

CDM Camp Dresser & McKee Inc.

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Figure F2-1B for the native material. The results are summarized in Table F2-1. The concentration of PAHs ranged from below detectable levels to 29 mg/kg at sample location CG-SED-6. Elevated concentrations of VPH were found in the 0 to 2 ft depth interval at CG-SED-4 (11.5 mg/kg) and CG-SED-6 (8.2 mg/kg). Petroleum odors were noted during sample collection at location CG-SED-4, however, none of the target VPH compounds (benzene, toluene, ethylbenzene, xylenes, and methyl-tertbutyl ether) were detected. The total of the PCB aroclors was well below 2 mg/kg, and ranged in concentration from below detectable levels to 0.325 mg/kg.

The concentration of lead ranged from below detectable levels to 250 mg/kg. The results from TCLP tests run on three samples were all below the regulatory limit of 5 mg/L. Samples were collected from the Charlesgate area and composited into a sample to be tested for the paint filter test. The result showed that free liquids were present.

2.3.2 Back Bay Fens

Sediment Characteristics

Back Bay Fens borings were completed to a maximum depth of fourteen feet below the top of sediment or upon encountering native material. The general stratigraphy encountered during the advancement of the Back Bay Fens borings consisted of a varying thickness (2 to 12 ft) of a soft, black, organic silt layer, intermixed with fine to coarse sand and gravel. Organic material, consisting of decayed plant matter, sticks, root mass, and peat, was observed in the upper limits (2 to 4 ft) of sediment at several boring locations. Small amounts of brick, wood, glass, and concrete were also observed within the silt layer at several boring locations. The southern limits of the Fens exhibited shallow deposits (0 to 4 ft) of sediment comprised of coarse, grained sand and gravel with little organic material. Within the northern two thirds of the Fens the depth of the sediment increased to an average depth of seven feet below the top of the sediment. Typically, the deeper deposits of sediment contained finer grained sand and increased organic silt. The native material underlying the organic silt layer was typically observed at 2 to 12 ft below the top of the sediment. Native material consists of grey, loose to dense, fine to medium sand with varying amounts of fine gravel and silt. Traces of shell fragments and peat were also observed within the native material. Petroleum odors were noted at several boring locations within the Back Bay Fens Area. At locations BBF-SED-7, -13, -21, -25, and -48, petroleum odors were noted in surface samples collected from 0 to 2 feet below the top of the sediment. Petroleum odors were noted in samples collected down to eight feet below the top of the sediment from locations BBF-SED-54, -55, -56, -57, -58, -59, and -60.

Sediment Analytical Results

The locations for the Back Bay Fens area are shown on Figures F2-1A,B through F2-3A,B for fill and native material. The results are summarized in Table F2-2. Several locations from the Agassiz Bridge to Ipswich Street (BBF-SED-45 through BBF-SED-58) exceeded the federal regulatory level for TCLP lead. The concentrations are consistent and range in concentration from 5 mg/L to 6.1 mg/L at location BBF-SED-55. This sample was collected from the 6 to 8 ft depth interval and was the only

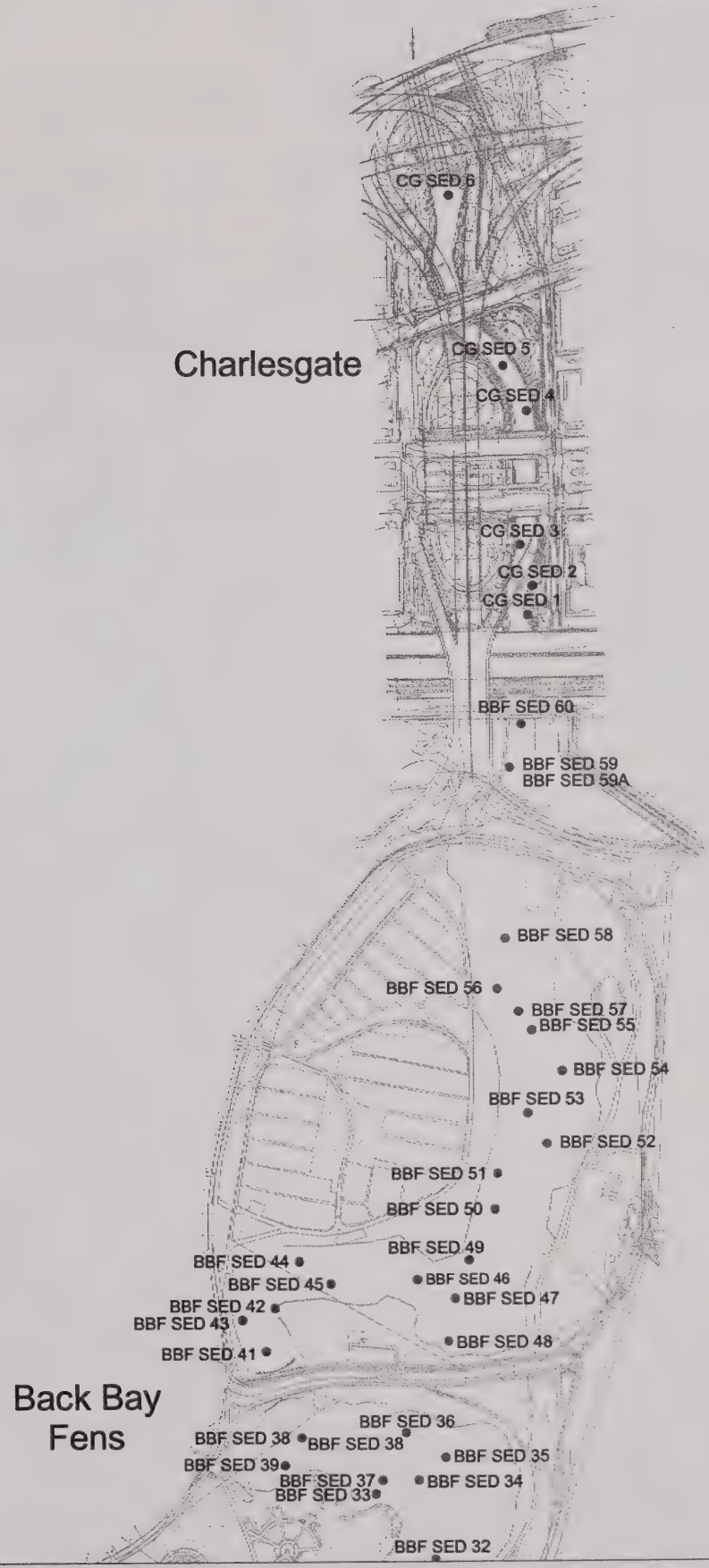

Figure F2-1B
Charlesgate and
Back Bay Fens Area
Native Material

400 0 400 Feet

CDM Camp Dresser & McKee Inc.

CDM 2000

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TABLE F2-1
SUMMARY OF ANALYTICAL RESULTS - CHARLESGATE AREA

Muddy River Restoration Project

Contaminant	No. of Samples	Concentration [1] Minimum	Concentration [1] Maximum	DEP Landfill Reuse Levels [1] Unlined	DEP Landfill Reuse Levels [1] Lined	No. of Samples Exceeding Unlined	No. of Samples Exceeding Lined
Total Arsenic	17	Not Detected		40	40	No Exceedances	
Total Cadmium	17	ND	0.93	30	80	No Exceedances	
Total Chromium	17	5.7	68	1000	1000	No Exceedances	
Total Lead	17	ND	250	1000	2000	No Exceedances	
TCLP Lead (mg/L)	3	Not Detected		NA	NA	No Exceedances	
Total Mercury	17	ND	0.48	10	10	No Exceedances	
Total EPH	17	ND	130	2500	5000	No Exceedances	
Total PCBs	13	ND	0.33	<2	<2	No Exceedances	
Total PAHs	17	ND	29	100	100	No Exceedances	
Total VPH	17	ND	11.5	NA	NA	No Exceedances	
Total VPH Target	17	ND	1	4	10	No Exceedances	
Reactive Sulfide	13	ND	450	500		No Exceedances	
Reactive Cyanide	13	Not Detected		250		No Exceedances	
pH	13	6.4	9	2 < pH < 12.5		No Exceedances	
Conductivity	13	80	1500	4000 umhos/cm	8000 umhos/cm	No Exceedances	

[1] All results are reported in mg/kg unless otherwise noted.

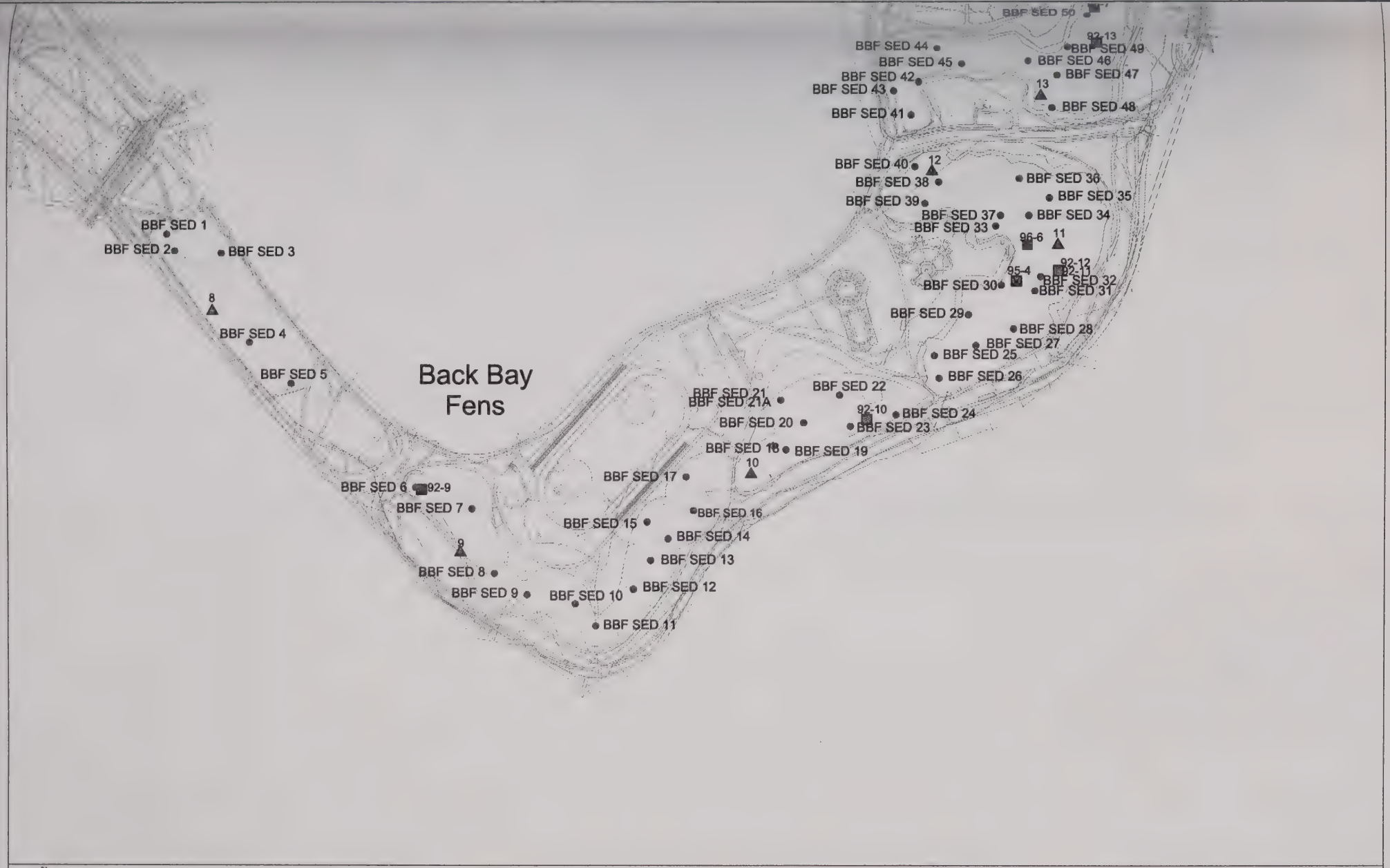

Figure F2-2A
Back Bay Fens Area
Fill Material

CDM Camp Dresser & McKee Inc.

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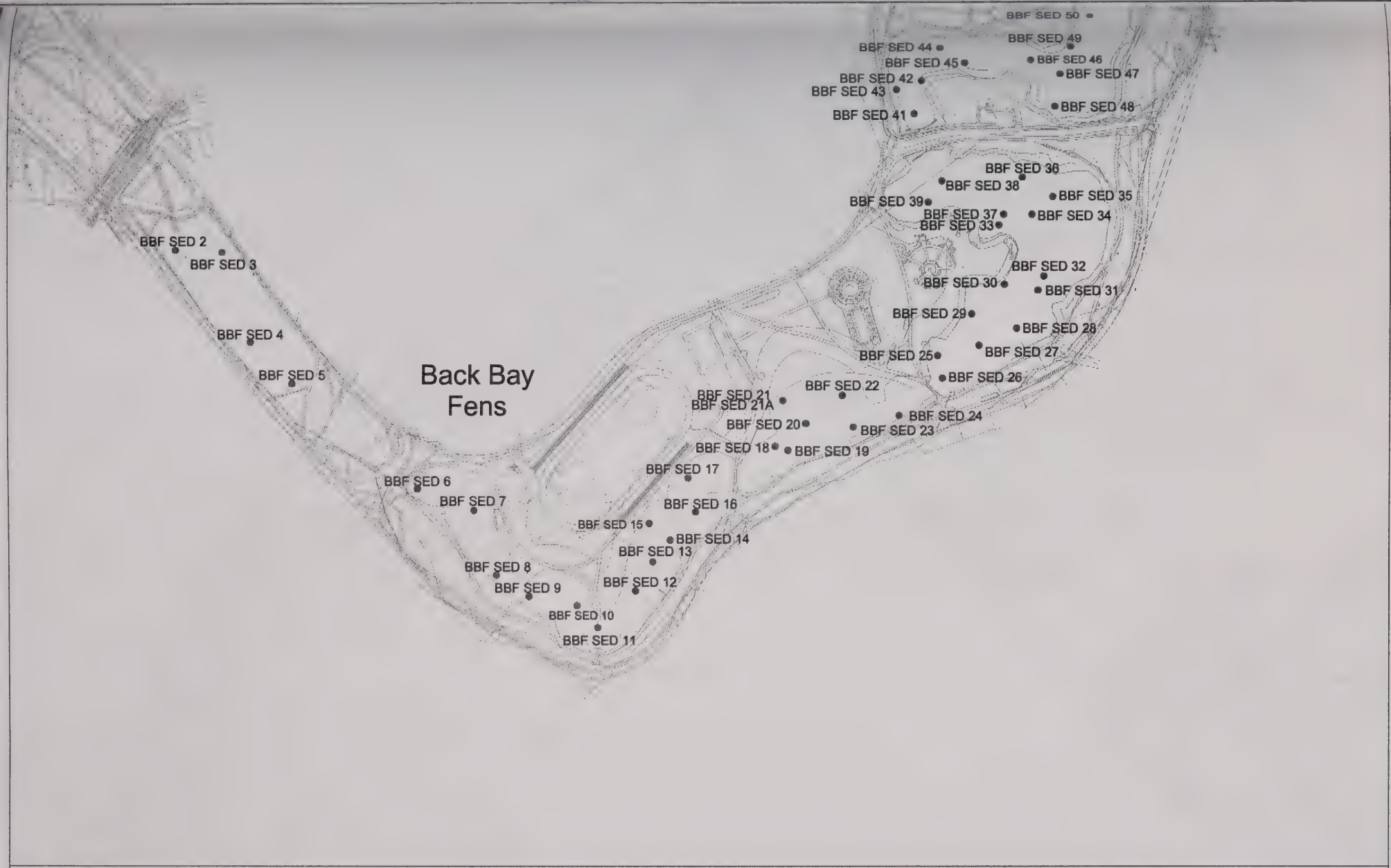

Figure F2-2B
Back Bay Fens Area
Native Material

400 0 400 Feet

CDM Camp Dresser & McKee Inc.

CDM 2000

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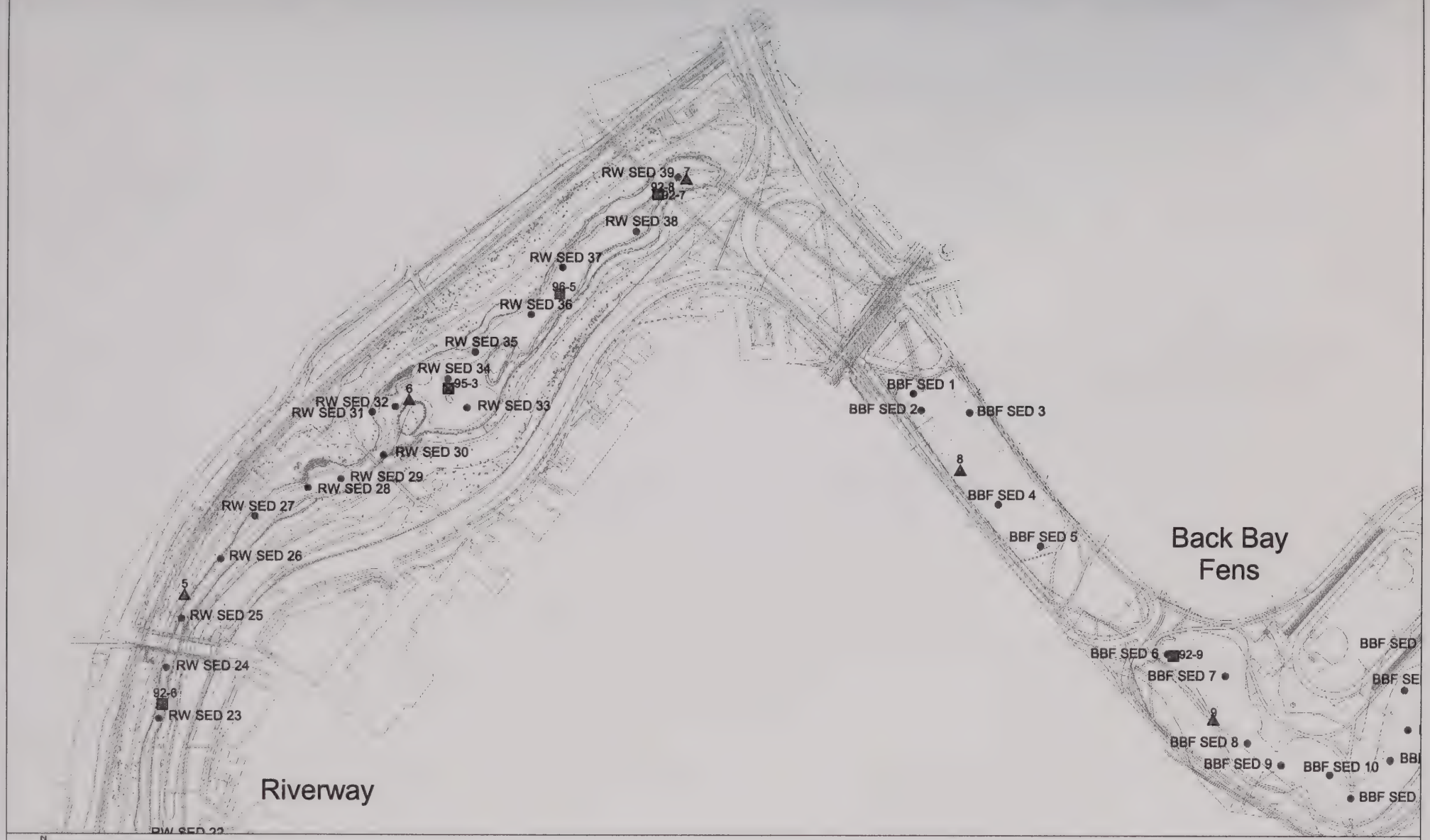

Figure F2-3A
Riverway and Back Bay Fens Area
Fill Material

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

CDM Camp Dresser & McKee Inc.

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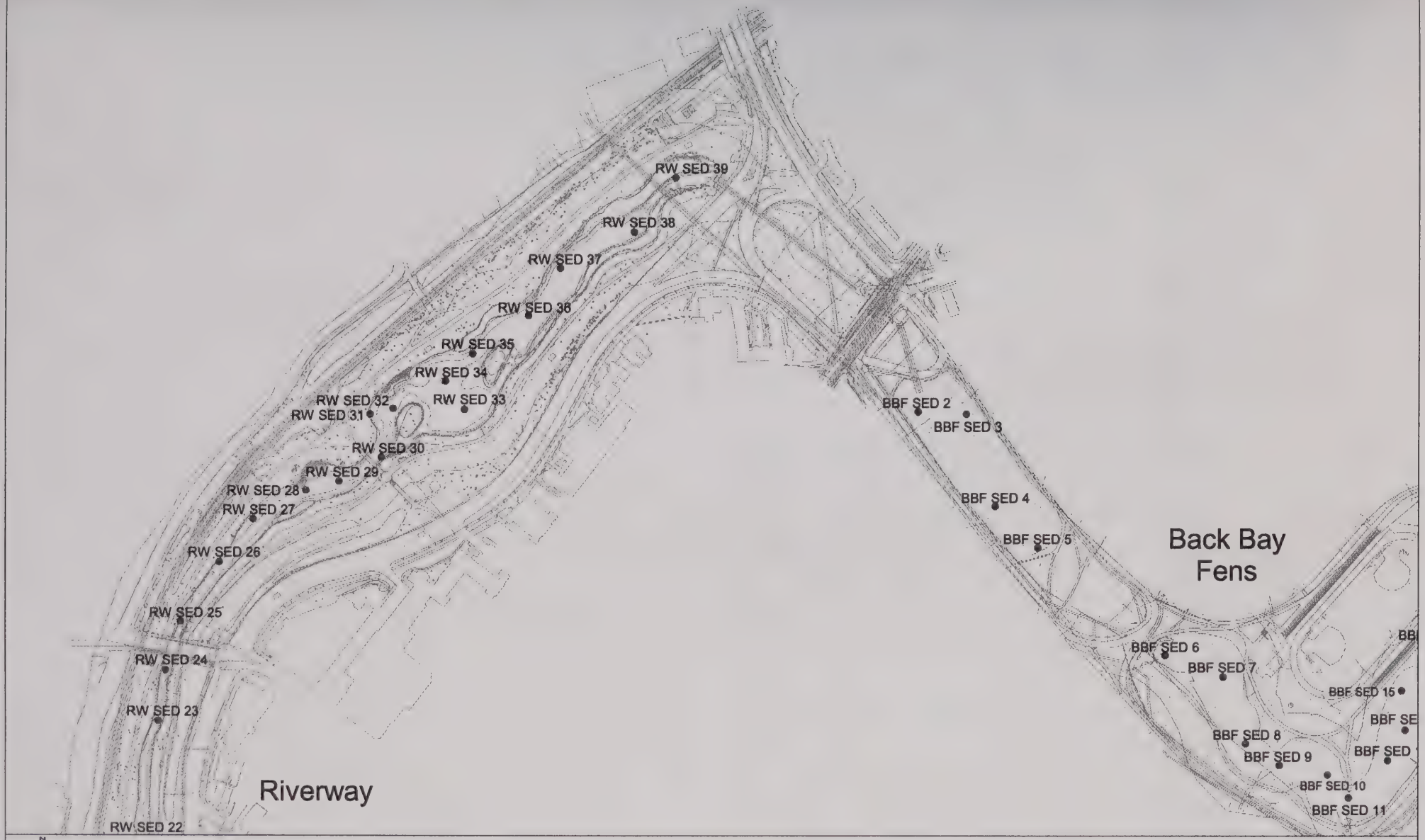

Figure F2-3B
Riverway and Back Bay Fens Area
Native Material

400 0 400 Feet

CDM Camp Dresser & McKee Inc.

CDM 2000

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TABLE F2-2
SUMMARY OF ANALYTICAL RESULTS - BACK BAY FENS

Muddy River Restoration Project

Contaminant	No. of Samples	Concentration [1] Minimum	Concentration [1] Maximum	DEP Landfill Reuse Levels [1] Unlined	DEP Landfill Reuse Levels [1] Lined	No. of Samples Exceeding Unlined	No. of Samples Exceeding Lined
Total Arsenic	169	ND	110	40	40	13	13
Total Cadmium	169	ND	23	30	80	No Exceedances	
Total Chromium	169	7.3	420	1000	1000	No Exceedances	
Total Lead	169	ND	2100	1000	2000	33	2
TCLP Lead (mg/L)	82	ND	6.1	NA	NA	9 Exceeds RCRA [2]	
Total Mercury	169	ND	8.9	10	10	No Exceedances	
Total EPH	169	ND	2530	2500	5000	2	None
Total PCBs	162	ND	7.6	<2	<2	16	16
Total PAHs	169	ND	1510	100	100	4	4
Total VPH	169	ND	80	NA	NA	No Exceedances	
Total VPH Target	169	ND	32.1	4	10	1	1
Reactive Sulfide	162	ND	1700	500		15	15
Reactive Cyanide	162	Not Detected		250		No Exceedances	
pH	162	5.7	8	2 < pH < 12.5		No Exceedances	
Conductivity	162	69	7200	4000 umhos/cm	8000 umhos/cm	15	None

[1] All results are reported in mg/kg unless otherwise noted.

[2] Concentration above the federal regulatory limit of 5 mg/L.

sample of native material that exceeded the regulatory limit. The TCLP result from the surficial sample at this location was 5.5 mg/L.

The other constituent of significance that was detected consistently is arsenic. Concentrations of arsenic above the DEP landfill reuse level of 40 mg/kg were found in samples collected downstream from the Emmanual College Drain overflow to Boston Gatehouse No. 1 (BBF-SED-7 through BBF-SED-27). The concentrations ranged from 40 mg/kg to 110 mg/kg at BBF-SED-10. This sample was tested for TCLP and the arsenic result was below the detection limit.

The results of the VPH scan correlated fairly well with observations (i.e., petroleum odors) noted during sample collection. The C_9 to C_{12} aliphatic hydrocarbons were found more frequently than the other carbon ranges and typically at higher concentrations. Toluene was the only target compound found, and at several locations. The concentration of toluene ranged from 0.083 mg/kg to 0.68 mg/kg in samples collected from the 0 to 2 ft and the 2 to 4 ft depth intervals. The results of the EPH scan were below the DEP landfill reuse levels except at location BBF-SED-58. Samples collected from the 0 to 2 ft and 2 to 4 ft depth intervals had concentrations of 2,510 mg/kg and 2,530 mg/kg, respectively. Elevated levels of target PAH compounds were found in a sample collected of native material at location BBF-SED-17. The total PAH concentration was 1,510 mg/kg in the 6 to 8 ft depth interval. Total PAHs above the DEP landfill reuse level of 100 mg/kg were found at locations BBF-SED-31 at a concentration of 138 mg/kg, BBF-SED-37 at a concentration of 145 mg/kg and BBF-SED-57 at a concentration of 112 mg/kg. These samples were collected from the fill material.

Concentrations of PCBs above 2 mg/kg were found in most of the samples collected from the Boston Gatehouse No. 1 to Ipswich Street. The concentrations in these samples ranged from 2 mg/kg to 7.6 mg/kg. Only aroclor 1254 and 1260 were found above detectable levels in the samples analyzed. The results of the pesticide analysis show that 4,4'-DDD, 4,4'-DDE and 4,4'-DDT were detected most frequently. The concentrations found were typically below 1 mg/kg with the following exceptions: BBF-SED-27 (4,4'-DDD at 1.2 mg/kg); BBF-SED-43 (4,4'-DDD at 1.5 mg/kg); BBF-SED-50 (4,4'-DDD at 1.8 mg/kg); and BBF-SED-58 (4,4'-DDD at 2.3 mg/kg and 4,4'-DDT at 1.5 mg/kg).

Select samples were also analyzed for nitrates and total phosphorus. Nitrates were not detected and total phosphorus was either not detected or found at low levels.

Reactive sulfide above the regulatory limit was found in 15 samples ranging in concentration from 510 mg/kg to 1,700 mg/kg. Samples from five of the locations also had TCLP lead above the regulatory limit. Eight representative samples were submitted for the paint filter test. The results showed that five of the samples did not have free liquids present and three of the samples did contain free liquids.

2.3.3 Riverway

Sediment Characteristics

The Riverway borings were completed to a maximum depth of sixteen feet below the top of sediment or upon encountering native material. The general stratigraphy encountered during the advancement of the Riverway borings consisted of varying thickness (2 to 10 ft) of a soft, black, organic silt layer, intermixed with fine to coarse sand and gravel. Organic material was typically observed in the upper limits (0 to 2 ft) of sediment, however, this material was observed to depths of eight feet at the southern limits of the Riverway area. Small amounts of brick, wood, glass and concrete were also observed within the silt layer at several boring locations. The native material underlying the silt layer was typically observed at two to ten feet below the top of the sediment. Native material consists of black-grey, medium dense to very dense, fine to medium sand with varying amounts of fine gravel, and silt. Small amounts of silty clay and peat were observed within the native material at the northern limits of the Riverway Area. Petroleum odors were noted in samples collected from a few boring locations within the Riverway Area, specifically at boring locations RW-SED-1, -4 and -9. These samples were collected in areas of miscellaneous fill or organic material. Samples were not recovered from three proposed locations due to low recovery volumes of sediment material that consisted of mostly gravel. The locations were downstream of the section where the Riverway crosses Brookline Avenue.

Sediment Analytical Results

The results of the VPH scan show similar concentrations of the C_9 to C_{10} aromatic hydrocarbons in samples collected from the southernmost section of the Riverway (i.e., sample locations RW-SED-01 through RW-SED-09). Concentrations in the 0 to 2 ft depth interval ranged from 14 mg/kg to 42 mg/kg with most of the samples at a concentration of 23 mg/kg. The target compounds toluene, xylenes and naphthalene were also consistently detected in these samples. Naphthalene was the only compound detected at a concentration above 1 mg/kg. The results of samples collected further downstream primarily showed low levels of naphthalene. These results are consistent with the results of the EPH scan as several locations had EPH and target PAH concentrations above the DEP landfill reuse levels. Samples of fill material at locations RW-SED-04, RW-SED-09, RW-SED-19, RW-SED-21, RW-SED-27, and RW-SED-33 through RW-SED-37 contained EPH at concentrations above 2,500 mg/kg. Samples collected from nine locations contained total PAH compounds above 100 mg/kg. The highest results were collected from location RW-SED-19 at the 0 to 2 ft and the 2 to 4 ft depth intervals at concentrations of 372 mg/kg and 399 mg/kg, respectively.

There were no detectable levels of PCBs found in samples collected from the Riverway. For the pesticide scan, 4,4′-DDD was the only compound detected except for one sample that showed 4,4′-DDT. The concentrations of 4,4′-DDD ranged from below detectable levels to 4.4 mg/kg in a sample of fill material collected at location RW-SED-35.

Select samples were also analyzed for nitrates and total phosphorus. Nitrates were not detected in the samples analyzed. The results of the total phosphorus show elevated levels in most of the samples analyzed. The concentrations of total phosphorus range from 262 mg/kg to 3,180 mg/kg. The concentrations generally increased with depth.

Several samples had concentrations of arsenic above the DEP landfill reuse level. These locations include RW-SED-01 (45 mg/kg), RW-SED-03 (89 mg/kg), RW-SED-26 (40 mg/kg), RW-SED-28 (47 mg/kg at the 0 to 2 ft interval and 50 mg/kg at the 2 to 4 ft interval), and RW-SED-34 (65 mg/kg). Only seven samples had concentrations of lead at or above 1,000 mg/kg. None of the samples analyzed exceeded the regulatory limit for TCLP lead. Reactive cyanide and sulfide were not detected above their respective federal regulatory limits. Three samples were tested for the paint filter test. The results showed that there was no free liquid present in the samples. The sample locations for the Riverway are shown on Figures F2-3A,B and F2-4A,B for the fill and native material. The results are summarized in Table F2-3.

2.3.4 Leverett Pond

Sediment Characteristics

The Leverett Pond borings were completed to a maximum depth of fourteen feet below the top of sediment or upon encountering native material. The general stratigraphy encountered during the advancement of the Leverett Pond borings consisted of varying thickness (2 to 8 ft) of a soft, black, organic silt, intermixed with fine to coarse sand and gravel. Pockets of organic material were observed in the upper limits (0 to 4 ft) of sediment at a few boring locations. Trace amounts of brick were also observed within the silt layer at two boring locations. The native material underlying the silt layer was typically observed at two to eight feet below the top of the sediment. Native material consists of grey, loose to medium dense, fine to medium sand with varying amounts of fine gravel and silt. The exception to the above native description is within the southern portion of Leverett Pond where the native material contained soft, grey clay with varying amounts of silt. Pockets of peat were observed within the native material at the northern limits of the Pond. Petroleum odors were present at one boring location (LP-SED-26) which appears to be associated with a pocket of organic material in that area.

Sediment Analytical Results

The C_9 to C_{12} aliphatic hydrocarbons of the VPH scan were found more frequently than the other carbon ranges and typically at higher concentrations. The concentrations of the carbon ranges generally decreased with depth. The concentrations of VPH were higher in samples collected from the center to the outlet of Leverett Pond. Naphthalene and toluene were found at low levels in the surficial samples collected from locations LP-SED-22 and LP-SED-24. The results for the EPH scan were all below the DEP landfill reuse level of 2,500 mg/kg except at LP-SED-17 that contained EPH at 2,500 mg/kg in the 0 to 2 ft sample. Total PAHs above 100 mg/kg were found at several locations along Leverett Pond. The results above 100 mg/kg in samples collected from 0 to 2 ft included LP-SED-2 at 131 mg/kg, LP-SED-9

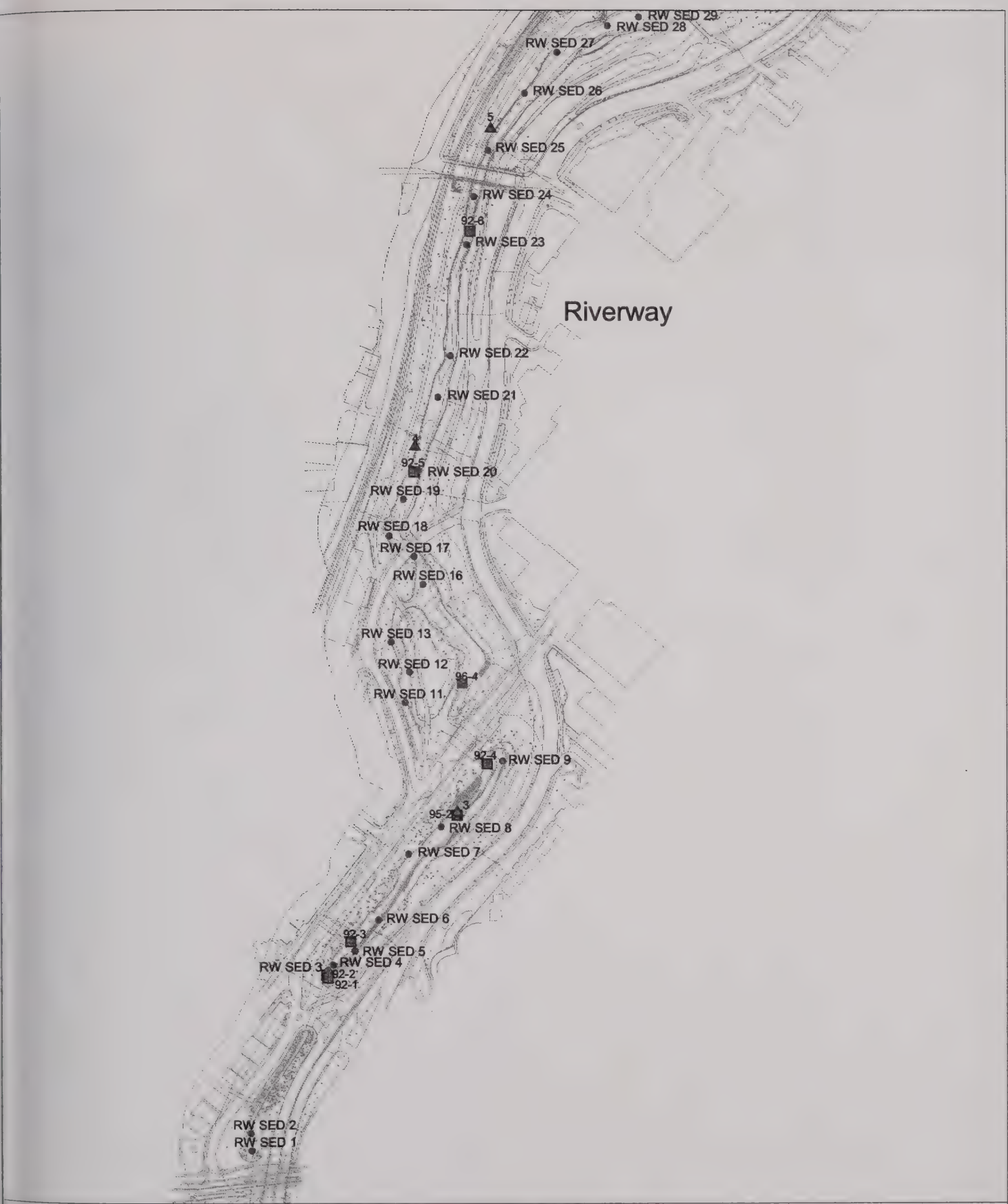

Figure F2-4A
Riverway
Fill Material

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

CDM Camp Dresser & McKee Inc.

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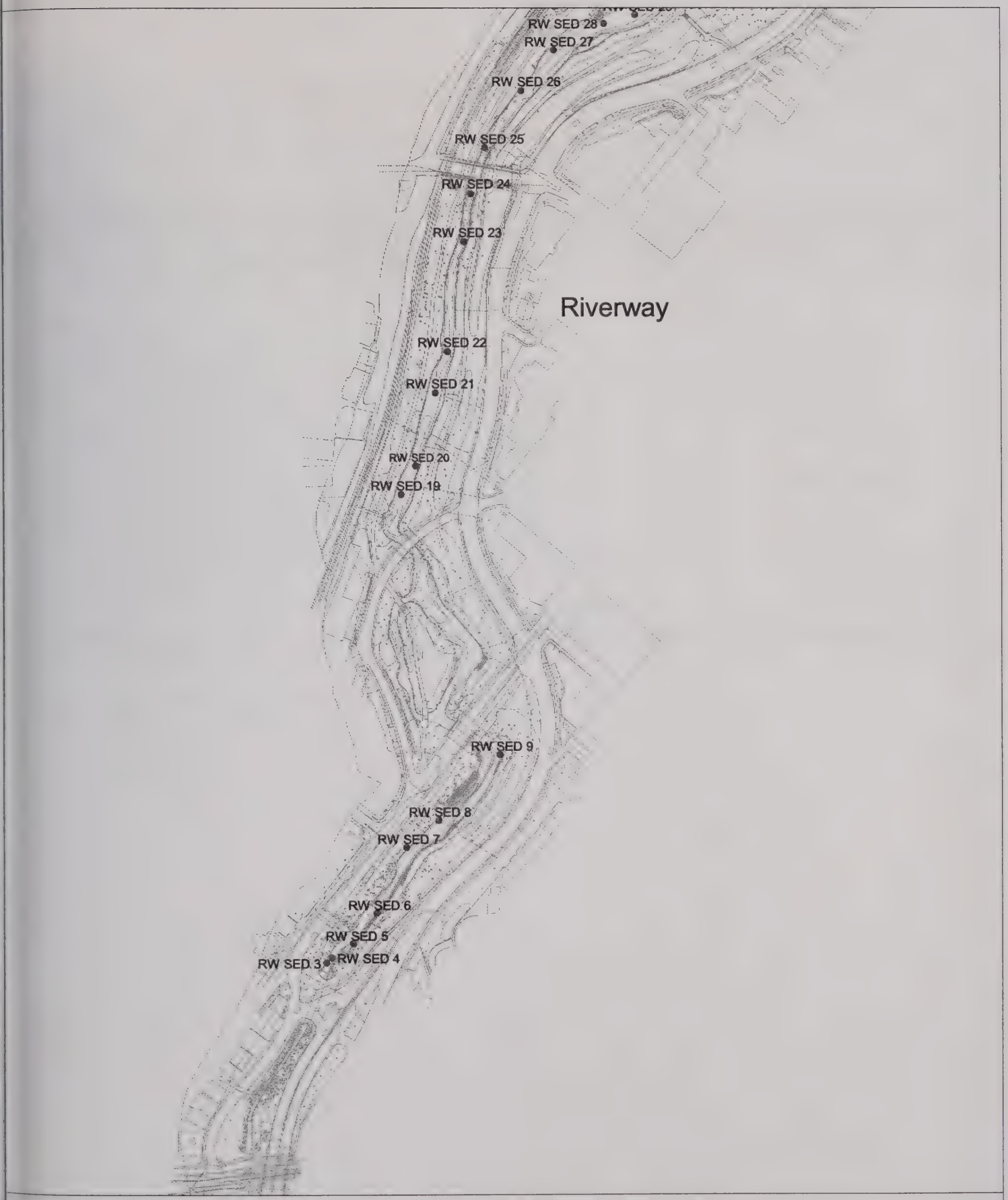

Figure F2-4B
Riverway
Native Material

400 0 400 Feet

CDM 2000

Camp Dresser & McKee Inc.

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TABLE F2-3
SUMMARY OF ANALYTICAL RESULTS - RIVERWAY

Muddy River Restoration Project

Contaminant	No. of Samples	Concentration [1] Minimum	Concentration [1] Maximum	DEP Landfill Reuse Levels [1] Unlined	DEP Landfill Reuse Levels [1] Lined	No. of Samples Exceeding Unlined	No. of Samples Exceeding Lined
Total Arsenic	82	ND	89	40	40	6	6
Total Cadmium	82	ND	17	30	80	No Exceedances	
Total Chromium	82	ND	190	1000	1000	No Exceedances	
Total Lead	82	ND	2000	1000	2000	7	1
TCLP Lead (mg/L)	48	ND	3.3	NA	NA	No Exceedances	
Total Mercury	82	ND	3.3	10	10	No Exceedances	
Total EPH	82	ND	7700	2500	5000	15	3
Total PCBs	46	Not Detected		<2	<2	No Exceedances	
Total PAHs	82	ND	399	100	100	13	13
Total VPH	82	ND	46	NA	NA	No Exceedances	
Total VPH Target	82	ND	2.4	4	10	No Exceedances	
Reactive Sulfide	47	Not Detected		500		No Exceedances	
Reactive Cyanide	47	ND	7	250		No Exceedances	
pH	38	5.5	8.4	2 < pH < 12.5		No Exceedances	
Conductivity	44	7	270	4000 umhos/cm	8000 umhos/cm	No Exceedances	

[1] All results are reported in mg/kg unless otherwise noted.

at 107 mg/kg, LP-SED-12 at 112 mg/kg, LP-SED-20 at 114 mg/kg, and LP-SED-24 at 155 mg/kg. Samples collected from LP-SED-20 at the 2 to 4 ft interval, LP-SED-21 and LP-SED-24 at the 4 to 6 ft interval also were above 100 mg/kg at concentrations of 131 mg/kg, 120 mg/kg and 133 mg/kg, respectively.

PCBs were detected in several samples from Leverett Pond; however, the concentrations were below the 2 mg/kg limit. As found with the other areas sampled, only aroclor 1254 and aroclor 1260 were found above detectable levels. The results for pesticides show that 4,4'-DDD, 4,4'-DDE and 4,4'-DDT were found in samples of the fill material in most of the samples analyzed. The highest concentration of 8.3 mg/kg was found at location LP-SED-25 in the sample collected from native material at a depth of 12 to 14 feet. Other locations with elevated concentrations include LP-SED-7 (5.4 mg/kg), LP-SED-11 (2.8 mg/kg) and LP-SED-17 (3.1 mg/kg). The concentrations of pesticides found at Leverett Pond were the highest in comparison to the other study areas.

The results for the metals showed elevated levels of lead and arsenic at several locations. Locations where samples were above 1,000 mg/kg total lead include LP-SED-4, LP-SED-11, LP-SED-13, LP-SED-16, LP-SED-17, LP-SED-18, and LP-SED-26. These locations extend the length of Leverett Pond and are generally centered within the pond. None of the samples analyzed exceeded the regulatory limit for TCLP lead. The locations of samples where arsenic was above 40 mg/kg include LP-SED-2, LP-SED-11, LP-SED-12, and LP-SED-13. The concentrations ranged from 42 mg/kg to 51 mg/kg.

Samples were also analyzed for reactive cyanide and sulfide. Reactive cyanides were not detected in any of the samples analyzed. Reactive sulfide was found above the 500 mg/kg regulatory limit in the sample collected at LP-SED-25 from 0 to 2 ft at a concentration of 1,300 mg/kg. Two samples were collected for analysis of the paint filter test. The results showed that free liquids were not present. The locations of samples collected at Leverett Pond are shown on Figures F2-5A,B for the fill and native material and the sample results are summarized in Table F2-4.

2.3.5 Willow Pond

Sediment Characteristics

Five borings were advanced in Willow Pond; however, due to the soft sediment only two of the locations could be advanced by drill rig. At the remaining locations, only surficial sediment samples were collected. The following geologic description therefore is based on observations recorded at WL-SED-1 and WL-SED-5. These borings were completed to a maximum depth of twelve feet below the top of sediment or upon encountering native material. The general stratigraphy encountered during the advancement of the borings consisted of varying thickness (0 to 8 ft) of a soft, black, organic silt layer, intermixed with fine to coarse sand and gravel. Trace amounts of brick, wood, glass, and asphalt were also observed at boring location WL-SED-5. The native material underlying the silt layer was typically observed at two to eight feet below the top of the sediment. The native material consists of tan, medium dense sand and silt. Petroleum odors were observed during

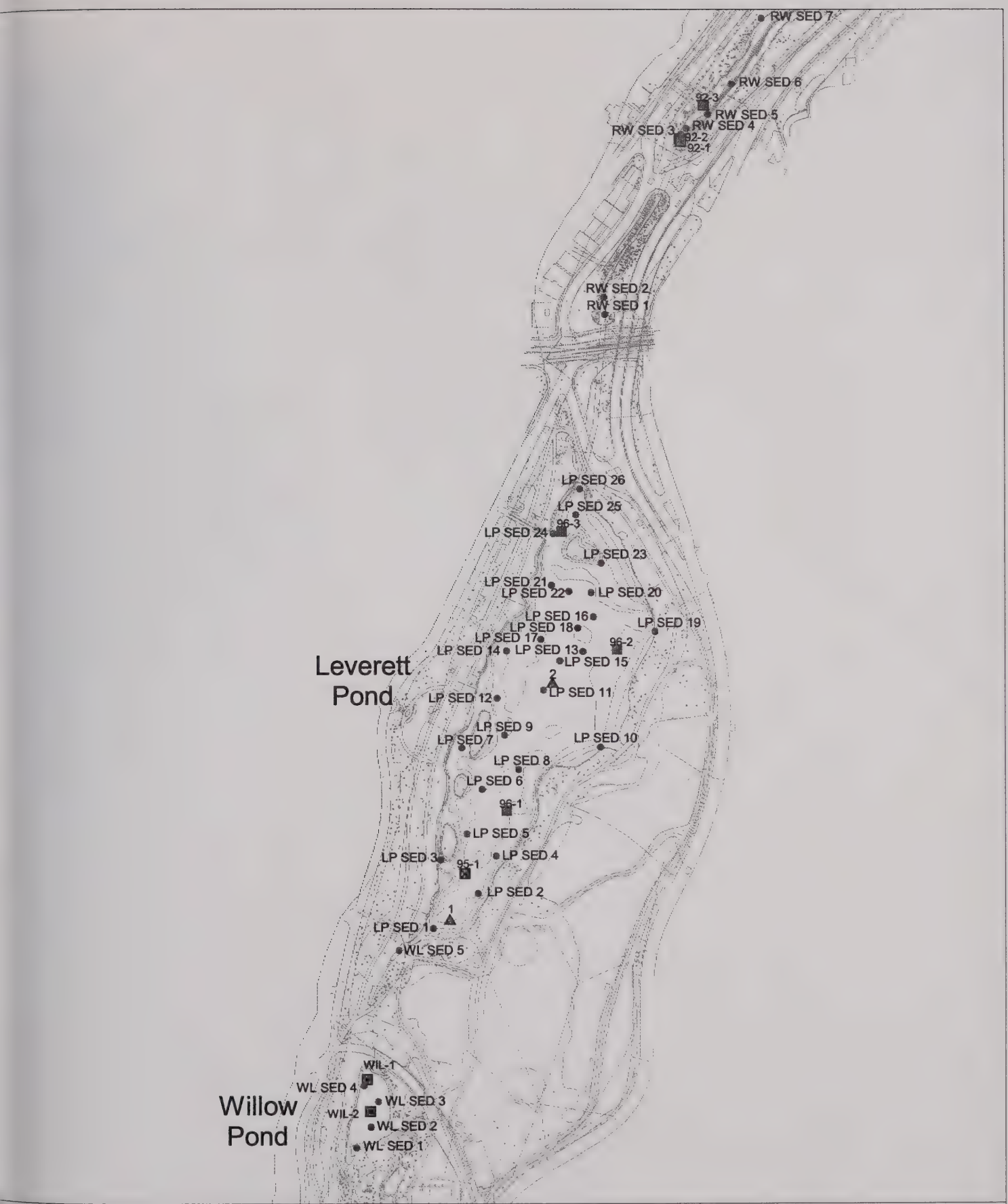

Figure F2-5A
Leverett and Willow Pond
Fill Material

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

CDM Camp Dresser & McKee Inc.

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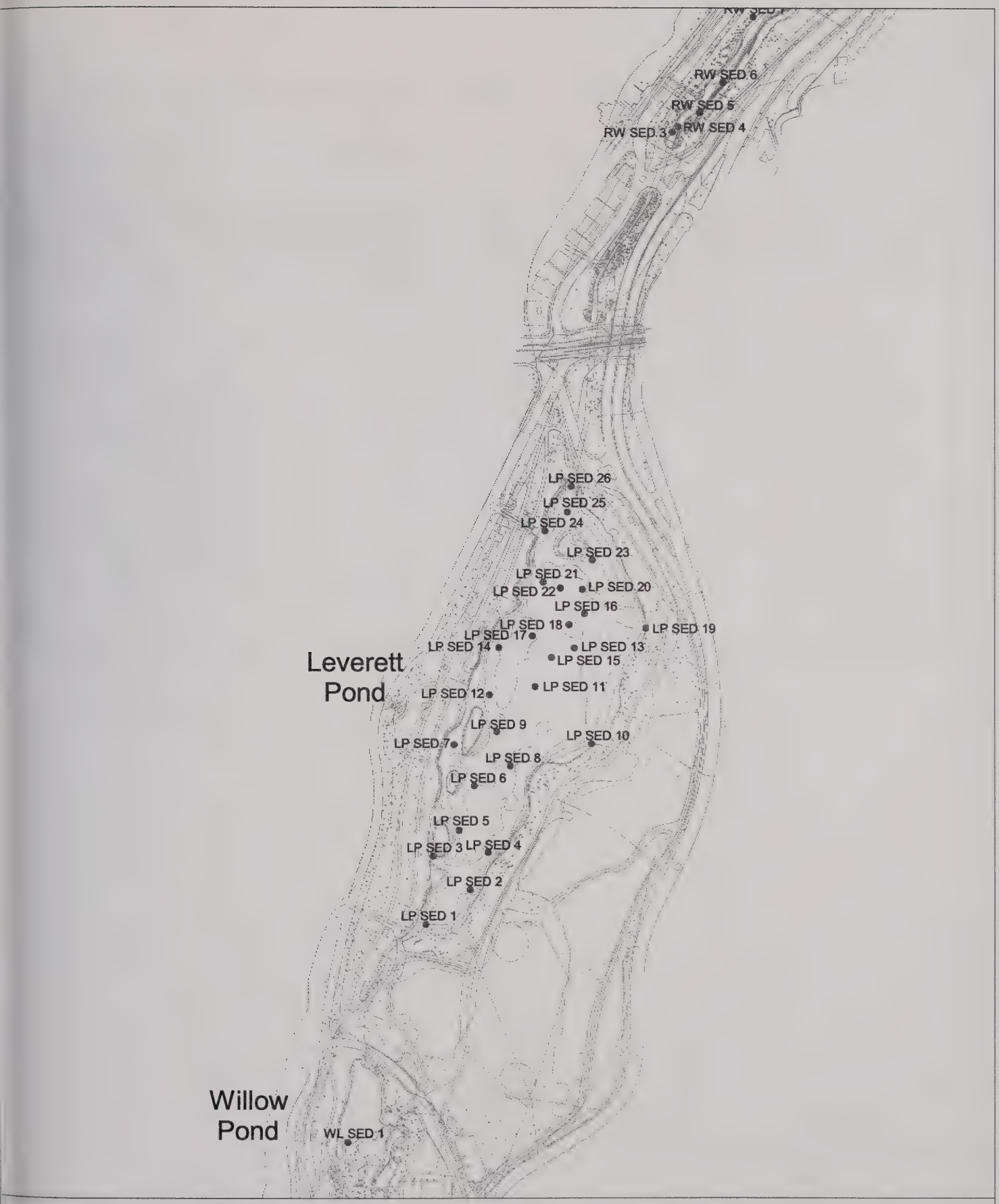

Figure F2-5B
Leverett and Willow Pond
Native Material

400 0 400 Feet

CDM 2000

Camp Dresser & McKee Inc.

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TABLE F2-4
SUMMARY OF ANALYTICAL RESULTS - LEVERETT POND

Muddy River Restoration Project

Contaminant	No. of Samples	Concentration [1] Minimum	Concentration [1] Maximum	DEP Landfill Reuse Levels [1] Unlined	DEP Landfill Reuse Levels [1] Lined	No. of Samples Exceeding Unlined	No. of Samples Exceeding Lined
Total Arsenic	67	ND	51	40	40	5	5
Total Cadmium	67	ND	6.6	30	80	No Exceedances	
Total Chromium	67	5	400	1000	1000	No Exceedances	
Total Lead	67	5.6	1700	1000	2000	9	None
TCLP Lead (mg/L)	30	ND	4	NA	NA	No Exceedances	
Total Mercury	67	ND	1.7	10	10	No Exceedances	
Total EPH	67	ND	2500	2500	5000	1	None
Total PCBs	33	ND	1.07	<2	<2	No Exceedances	
Total PAHs	67	ND	187	100	100	8	8
Total VPH	67	ND	32	NA	NA	No Exceedances	
Total VPH Target	67	ND	1.1	4	10	No Exceedances	
Reactive Sulfide	33	ND	1300	500		1	1
Reactive Cyanide	33	Not Detected		250		No Exceedances	
pH	33	5.1	7.7	2 < pH < 12.5		No Exceedances	
Conductivity	33	73	1500	4000 umhos/cm	8000 umhos/cm	No Exceedances	

[1] All results are reported in mg/kg unless otherwise noted.

the installation of boring WL-SED-5 in samples from the top of the sediment layer to a depth of eight feet.

Sediment Analytical Results

The results for the VPH scan showed detectable levels of C_5 to C_8 and C_9 to C_{12} aliphatic hydrocarbons in samples of fill and native material collected at locations WL-SED-1 and WL-SED-5. At locations WL-SED-2, -3 and -4, samples were only collected from the 0 to 2 ft depth interval. The results of these samples showed elevated levels of the C_9 to C_{10} aromatic hydrocarbons and the C_9 to C_{12} aliphatic hydrocarbons. The total carbon range concentrations were 118 mg/kg in sample WL-SED-02, 51 mg/kg in sample WL-SED-3 and 69 mg/kg in sample WL-SED-4. Individual target compounds were not detected in any of the samples analyzed.

Based on the VPH results of samples collected from locations WL-SED-1 and WL-SED-5, that noted that non-fuel hydrocarbons were contributing to the C_5 to C_8 aliphatic range, samples collected from WL-SED-2, -3 and -4 were also analyzed for VOCs by Method 8260. The VOC compounds detected in sample WL-SED-2 include meta-, para-xylenes at 0.12 mg/kg, meta-propylbenzene at 0.11 mg/kg, 1,3,5-trimethylbenzene at 0.25 mg/kg, 1,2,4-trimethylbenzene at 0.53 mg/kg and sec-butylbenzene at 0.13 mg/kg. The compounds detected in sample WL-SED-3 include toluene at 0.18 mg/kg and 1,2,4-trimethlybenzene at 0.13 mg/kg. There were no VOCs detected in sample WL-SED-4.

The results of the EPH scan were well below the DEP landfill reuse levels in each of the samples analyzed. The total PAH compounds in samples WL-SED-2 and WL-SED-3 were above the 100 mg/kg limit at concentrations of 101 mg/kg and 213 mg/kg, respectively. The results for PAHs in samples WL-SED-1, -4 and -5 were well below the 100 mg/kg limit.

The results of the PCB analysis showed concentrations well below the 2 mg/kg limit. The results of the pesticide analysis showed detectable levels of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT. Concentrations of 4,4'-DDD above 1 mg/kg were found at each of the sample locations. The highest concentration of 3.8 mg/kg was found in the sample collected at WL-SED-3. The highest concentration for 4,4'-DDT of 3.6 mg/kg was found in the native sample collected from WL-SED-5.

The concentrations of metals found were below the DEP landfill reuse levels, and were generally lower in comparison with the other study areas. None of the samples tested for TCLP lead exceeded the regulatory limit. The results for reactive cyanide and sulfide were below their respective regulatory limits. One sample was tested for the paint filter test. The results showed that there was no free liquid present. The locations for Willow Pond are shown on Figures F2-6A,B for fill and native material and the sample results are summarized in Table F2-5.

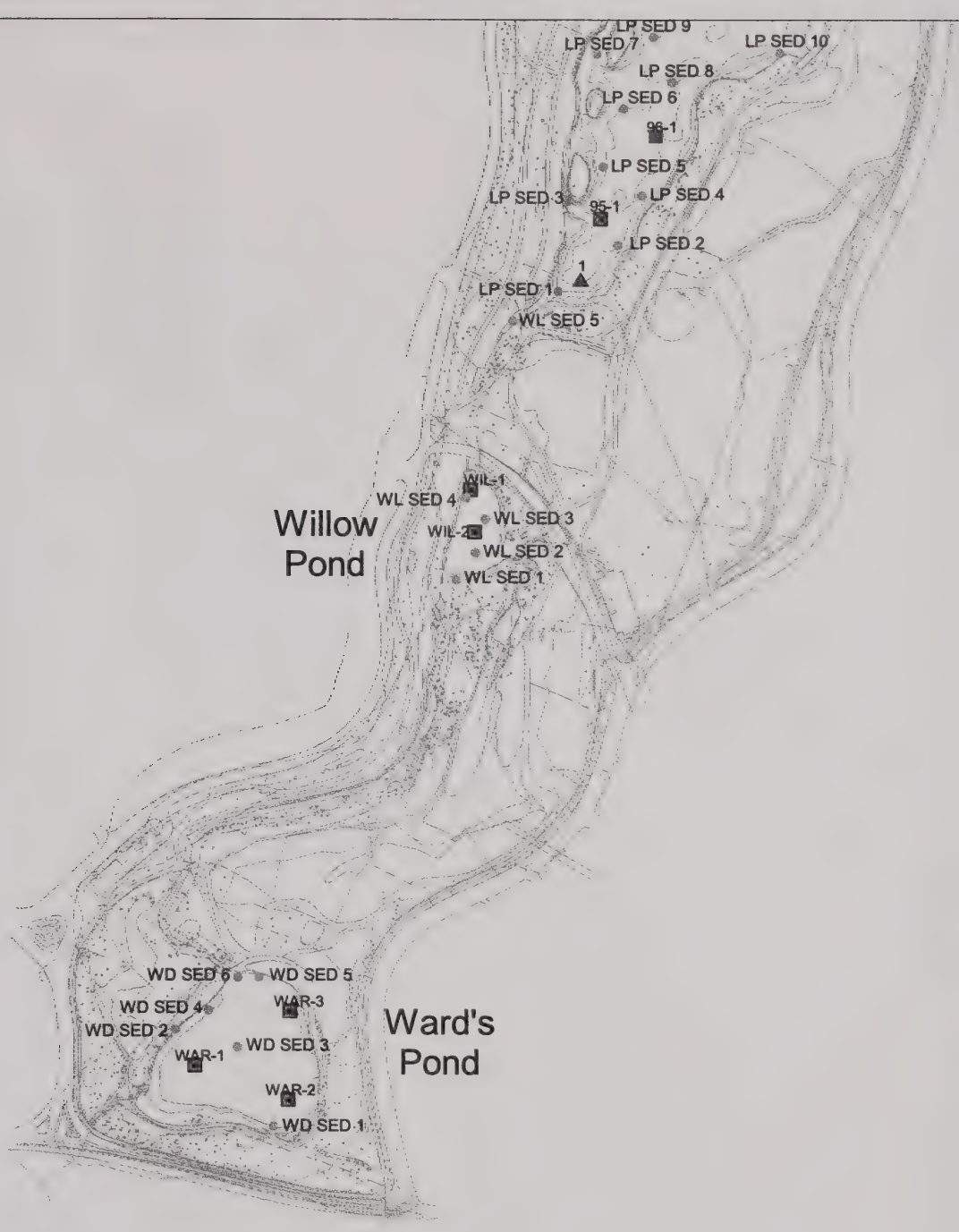

Figure F2-6A
Willow and Ward's Pond
Fill Material

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

CDM Camp Dresser & McKee Inc.

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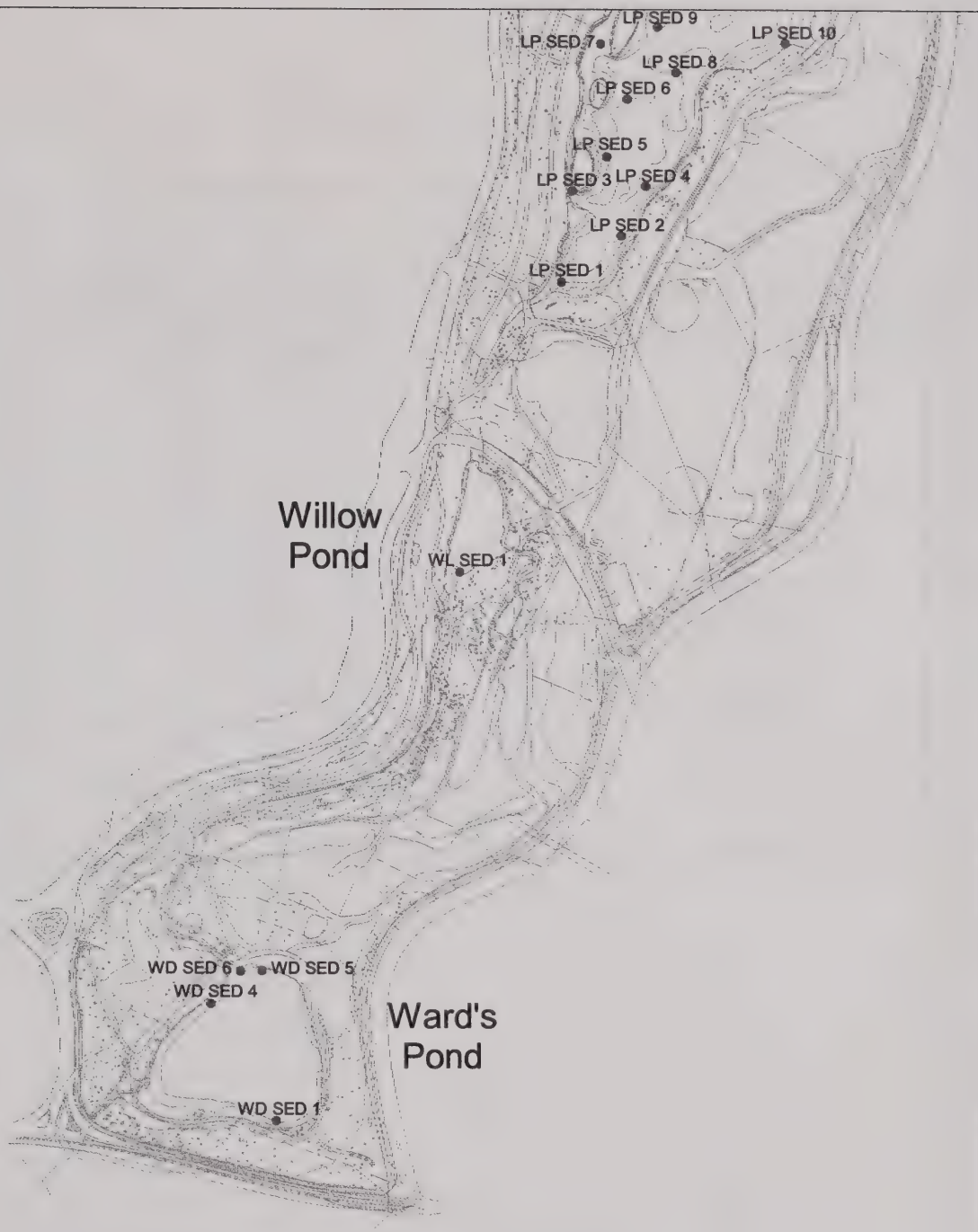

Figure F2-6B
Willow and Ward's Pond
Native Material

400 0 400 Feet

CDM Camp Dresser & McKee Inc.

CDM 2000

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TABLE F2-5
SUMMARY OF ANALYTICAL RESULTS - WILLOW POND

Muddy River Restoration Project

Contaminant	No. of Samples	Concentration [1] Minimum	Concentration [1] Maximum	DEP Landfill Reuse Levels [1] Unlined	DEP Landfill Reuse Levels [1] Lined	No. of Samples Exceeding Unlined	No. of Samples Exceeding Lined
Total Arsenic	10	ND	36	40	40	No Exceedances	
Total Cadmium	10	ND	2.3	30	80	No Exceedances	
Total Chromium	10	9.2	57	1000	1000	No Exceedances	
Total Lead	10	4	960	1000	2000	No Exceedances	
TCLP Lead (mg/L)	4	ND	2	NA	NA	No Exceedances	
Total Mercury	10	ND	0.8	10	10	No Exceedances	
Total EPH	10	ND	1410	2500	5000	No Exceedances	
Total PCBs	9	ND	0.153	<2	<2	No Exceedances	
Total PAHs	10	ND	213	100	100	2	2
Total VPH	10	6	118	NA	NA	No Exceedances	
Total VPH Target	10	Not Detected		4	10	No Exceedances	
Reactive Sulfide	9	ND	270	500		No Exceedances	
Reactive Cyanide	9	Not Detected		250		No Exceedances	
pH	9	5.7	7	2 < pH < 12.5		No Exceedances	
Conductivity	9	80	500	4000 umhos/cm	8000 umhos/cm	No Exceedances	

[1] All results are reported in mg/kg unless otherwise noted.

2.3.6 Ward's Pond Borings

Sediment Characteristics

These borings were completed to a maximum depth of ten feet below the top of sediment or upon encountering native material. The general stratigraphy encountered in Ward's Pond consisted of varying thickness (0 to 6 ft) of a soft, black, organic silt, intermixed with fine to coarse sand and gravel. The native material underlying the silt layer was typically observed at two to eight feet below the top of the sediment. Native material consists of grey, medium dense to very dense sand with varying amounts of silt and/or fine gravel. Petroleum odors were observed at location WD-SED-1 to depths of six feet below the top of the sediment layer.

Sediment Analytical Results

The results for the VPH scan showed detectable levels of C_5 to C_8 and C_9 to C_{12} aliphatic hydrocarbons in samples of fill and native material collected at locations WD-SED-1, WD-SED-2 and WD-SED-4. The carbon ranges were not detected in samples collected at locations WD-SED-3, WD-SED-5 and WD-SED-6. Target compounds were not detected in any of the samples analyzed. The sample collected at WD-SED-3 was also analyzed for VOCs by Method 8260. There were no VOC compounds detected. The results of the EPH scan including the target PAH compounds were well below the DEP landfill reuse levels in each of the samples analyzed.

The results of the PCB analysis showed concentrations below the 2 mg/kg limit. PCBs, including aroclors 1248, 1254 and 1260, were only detected in samples collected from location WD-SED-1. Similarly, the results of the pesticide analysis showed detectable levels only in a sample collected from WD-SED-1.

The results of the inorganic analysis generally showed low levels of metals at each of the locations sampled. However, a sample collected from location WD-SED-5 with a total lead concentration of 190 mg/kg exceeded the TCLP lead regulatory limit with a concentration of 19 mg/L.

The results for reactive cyanide were below the detection limits. A sample collected from location WD-SED-1 exceeded the regulatory limit for sulfides at a concentration of 510 mg/kg. One sample was tested for the paint filter test. The results showed that free liquid was present. The locations of samples collected from Ward's Pond are shown on Figure F2-6A,B for fill and native material and the sample results are summarized in Table F2-6.

TABLE F2-6
SUMMARY OF ANALYTICAL RESULTS - WARD'S POND

Muddy River Restoration Project

Contaminant	No. of Samples	Concentration [1] Minimum	Concentration [1] Maximum	DEP Landfill Reuse Levels [1] Unlined	DEP Landfill Reuse Levels [1] Lined	No. of Samples Exceeding Unlined	No. of Samples Exceeding Lined
Total Arsenic	15	ND	11	40	40	No Exceedances	
Total Cadmium	15	ND	1.8	30	80	No Exceedances	
Total Chromium	15	8.5	34	1000	1000	No Exceedances	
Total Lead	15	ND	1000	1000	2000	1	None
TCLP Lead (mg/L)	4	ND	19	NA	NA	1 Exceeds RCRA [2]	
Total Mercury	15	ND	0.36	10	10	No Exceedances	
Total EPH	15	ND	220	2500	5000	No Exceedances	
Total PCBs	10	ND	1.07	<2	<2	No Exceedances	
Total PAHs	15	ND	35	100	100	No Exceedances	
Total VPH	15	ND	70	NA	NA	No Exceedances	
Total VPH Target	15	Not Detected		4	10	No Exceedances	
Reactive Sulfide	10	ND	510	500		1	1
Reactive Cyanide	10	Not Detected		250		No Exceedances	
pH	10	5.5	6.9	2 < pH < 12.5		No Exceedances	
Conductivity	10	51	330	4000 umhos/cm	8000 umhos/cm	No Exceedances	

[1] All results are reported in mg/kg unless otherwise noted.

[2] Concentration above the federal regulatory limit of 5 mg/L.

Section 3
Data Analysis and Interpretation

3.1 Introduction

One of the objectives of CDM's field investigation was to collect data for areas that had not been previously investigated and to provide supplemental data, where needed, to characterize the sediment for disposal purposes. This section of the report will present an overall evaluation of the data collected and a discussion/review of potentially acceptable disposal options.

Overall, the results of CDM's investigation showed elevated concentrations of lead, arsenic, PAHs, and PCBs. Typically the concentrations of the analytes were higher in the top sediment layer, and in samples collected from the Back Bay Fens. Extractable petroleum hydrocarbons, including the target PAH compounds, were found primarily in samples collected from the Riverway. Total PCBs above 2 mg/kg were found in the Back Bay Fens only. The concentrations are usually higher near drain discharge points, specifically the Chestnut Street drain, Longwood Avenue drain and the Stony Brook Conduit. The results suggest that these drainage points are a continuing source of contamination. Other possible sources include runoff of fertilizer/treatment of lawn and garden areas or detergents and surfactants from roadways.

3.2 Data Interpretation

Given the inherent difficulties with sediment sampling and analysis (e.g., collecting a representative sample, sample heterogeneity and low percentage solids), and the varying and numerous possible sources of contaminants, delineation of areas with similar contaminants was not expected. However, there are several areas that have been identified. These areas include the following:

- Willow Pond;
- Riverway; and
- Back Bay Fens.

Willow Pond has been included in this discussion even though a known source has been identified. Fuel oil has been introduced to the Pond via the Chestnut Street drain. Sediment samples exhibit elevated concentrations of PAHs and similarities in the individual PAH compounds detected among these samples. In the samples collected by CDM that showed elevated concentrations of PAHs, the depth of contamination could not be determined since only the top 2 feet of fill material was sampled. Sample locations were only accessible by foot and the sediment layer was too soft to support the tripod sampling equipment set-up.

The results for the Riverway show that PAHs above 100 mg/kg were found primarily in this area. Soils and sediments contain a wide array of PAHs derived from both natural and anthropogenic sources. The major sources of PAHs are the combustion of fossil fuels and wood. Atmospheric deposition and direct disposal of combustion residues (ash) are significant pathways for soil and sediment PAHs. Anthropogenic activities began contributing large quantities of PAHs to the environment beginning approximately 80 to 100 years ago (Gschwend & Hites, 1981).

Riverway area sediments also contain phosphorus at elevated levels. Phosphorus was found at levels ranging from 262 mg/kg to 3,180 mg/kg. These concentrations are substantially higher than values found elsewhere in the Muddy River and suggest that enrichment of sediment phosphorus in this area has resulted. The average phosphorus concentration of upland mineral soils is 500 mg/kg (Black, 1968), whereas continental sediments contain on average 700 mg/kg and marine sediments contain an average 1,200 mg/kg (Brink, 1978). Phosphorus is tightly bound to soils and sediments in most environments and in many water bodies phosphorus becomes a limiting nutrient for eutrophication. Elevated levels of dissolved phosphorus may be present within the Riverway area and in turn this could lead to stimulation of aquatic plant growth.

Phosphorus concentrations generally increase in the down river direction and reaches the highest levels immediately prior to the river bend and flow into the Back Bay Fens area. This part of the river may be an area of sedimentation due to restricted flow conditions. The average phosphorus concentration of the fill and the native sediments are not significantly different and no clear trend in concentration gradient with depth is evident. Those native sediments derived from marine deposits, like Boston blue clay, would be expected to have higher concentrations than fill materials placed within the Riverway. The elevated levels of phosphorus in the fill sediment could be the result of particulate bound or dissolved phosphorus introduced via:

- Runoff and sedimentation of soils enriched with phosphorus;
- Runoff of fertilizer from adjacent lawn and garden areas;
- Runoff of detergents and other surfactants from roadways;
- Runoff and/or stormwater discharges containing animal fecal matter (dogs);
- Waterfowl fecal matter (e.g., ducks, sea gulls);
- Point source discharges in the area (Longwood Avenue Drain);
- River water contributed from up stream areas; and

- Biomass turnover.

There are two distinct areas in the Back Bay Fens that show consistent results for either arsenic or lead. Arsenic is present at elevated concentrations in samples collected in the area of Clemente Field, and lead is found at elevated levels, including TCLP lead above 5mg/L, in samples collected from the Lower Fens North Basin area. The Lower Fens North Basin is also the only area where PCBs were found above 2 mg/kg in each of the areas characterized by CDM. The elevated concentrations could be a result of discharges from the Stony Brook Conduit.

In the area of Clemente Field the average arsenic concentration in fill is 38 mg/kg and in the native sediment is 11 mg/kg. Whereas the average arsenic concentration within the Back Bay Fens in the fill sediment is 15.2 mg/kg, and the average concentration in the native sediment is 5.5 mg/kg. Although upland soils typically contain about 5 mg/kg of arsenic, marine sediments, like the Boston blue clays, contain an average of 40 mg/kg arsenic. Arsenic will also be higher in sediments that contain sulfides or that are laid down in a reducing environment. Although the native sediments within the Back Bay Fens area contain arsenic values within the range expected for marine sediments, the fill materials contain some arsenic levels that would suggest enrichment due to contaminant input.

Although arsenic in sediment is closely related to sulfide and organic matter content no clear correlation to reactive sulfide or organic matter content was observed. The arsenic present in the sediment may be bound to iron or other compounds that could limit its availability for leaching.

Historical sources of arsenic contamination include a variety of biocides, including rat poisons and agricultural pesticides, coal ash, and the combustion products of fossil fuels. Arsenic based insecticides and fungicides were commonly used in gardens in the early 1900's. Aquatic sediments are good scavengers of arsenic compounds and as such it is not unreasonable to see elevated levels of arsenic in sediments located adjacent to areas that have been used for agricultural or farming activities.

The other area within the Back Bay Fens that shows consistent contaminant concentrations is the Lower Fens North Basin. Most of the samples analyzed in this area contained TCLP lead above the regulatory limit. In most urban settings surficial soils have become enriched with lead. Lead enrichment has resulted near roadways and in watercourses receiving runoff due to atmospheric deposition of historical combustion of leaded gasoline. Other sources of lead in the urban environment include paints used in residential, commercial and garden applications. Peeling or scraping of leaded paint from residential buildings has resulted in soil lead levels exceeding thousands of parts per million in some cases. Other significant sources of anthropogenic lead include lead battery recycling facilities and lead smelters. The mobility of lead in soils varies depending on its form. Lead bound to organic matter may be more easily leached than that bound as sulfide or oxide compound. These

more soluble forms of lead may be present in the Back Bay Fens area and could account for the higher proportion of samples exhibiting lead toxic characteristics.

3.3 Disposal Recommendations

Disposal options have been identified for each of the areas studied based on the analytical results available and the expected depth of material to be dredged. The final disposal sites selected may be revised, however, if the physical and chemical quality of the sediments differs from the current view following processing. Likewise, disposal options may be reconsidered based on available landfill capacity and costs of disposal based on contractor's bids. The disposal options evaluated for the dredged material include the following:

- In-State Unlined Landfill;
- In-State Lined Landfill;
- Out-of-State Lined Landfill; and
- RCRA Subtitle C Landfill.

The DEP has established limits for specific contaminants that are acceptable for sediment reuse at Massachusetts landfills as daily cover, intermediate cover and/or pre-cap contouring material. Note that there are other acceptance criteria and/or DEP approval that may be required prior to disposal. If the reuse limits are exceeded then the sediment will have to be disposed of at an Out-of-State landfill. Sediment that meets the criteria of a hazardous waste will require disposal at a RCRA Subtitle C landfill.

Disposal options were determined based primarily on the concentrations of lead, arsenic, PAHs, PCBs, and reactive sulfide. Several sediment samples contained reactive sulfide concentrations above the regulatory limit of 500 mg/kg, which would necessitate disposal as a hazardous waste. However, it was assumed that the material would be disposed of at an Out-of-State, non-RCRA landfill facility because of the uncertainty in the guidance and EPA test methods, CDM's experience on other projects and the low frequency of samples above the regulatory level (6 percent of the samples analyzed).

The analytical results further indicate that during dredging and processing activities, air monitoring and emissions controls will be necessary to address the potential for release of volatile compounds and hydrogen sulfide. Disposal options for each of the areas are discussed in the following paragraphs.

Charlesgate Area

As shown on Figure F3-1, the results of samples collected from the Charlesgate area are all below the DEP landfill reuse levels for an unlined landfill. This includes samples of the fill and native material. Therefore, the disposal option for this area is at an unlined landfill.

Back Bay Fens

The proposed disposal options for the Back Bay Fens are shown in Figures F3-1 through F3-3. The results for sediments from the Massachusetts Turnpike to Ipswich Street are below the DEP landfill reuse levels for an unlined landfill. In the Lower Fens North Basin, analytical results for most of the samples exceeded the regulatory level for lead and therefore meet the criteria for a characteristic hazardous waste requiring disposal as such. Similarly as shown on Figure F3-2, a section in the Lower Fens Southern Basin that based on the TCLP lead result at location 96-6 will require disposal as a hazardous waste. Other than the Upper Fens Pond and a section of the lagoon area, most of the sediment dredged from the Back Bay Fens will require disposal at an Out-of-State landfill facility. The results of samples collected in the area of Clemente Field were consistent and showed concentrations of arsenic above the DEP reuse levels. The results for samples collected of the native material were also fairly consistent in this area, exceeding the concentration of conductivity for disposal at an unlined landfill. These results are consistent with the original land use of the Back Bay Fens that was a salt marsh. The results of samples collected from the Southern Basin were consistent and contained PCBs above the 2 mg/kg reuse levels.

Riverway

The disposal options proposed for the Riverway are shown on Figures F3-3 through F3-5. As shown on Figure F3-3, the results for the area in the Riverway North section meet the reuse disposal criteria for a lined landfill based on the concentration of extractable petroleum hydrocarbons. Sediments in the section near the Chapel Street Bridge and south of the Longwood Bridge in the Riverway North section as shown on Figure F3-4, are below the reuse levels for an unlined landfill. Out-of-State disposal has been identified for most of the Riverway due to the concentrations of PAHs and arsenic. Previous studies in the Riverway had identified the area near the Tannery Brook drain based on the elevated concentrations of PAHs found. However, CDM collected a sample near this location and found low levels of PAHs and lead. The highest concentrations of PAHs found in the Riverway were near the Longwood Avenue drain.

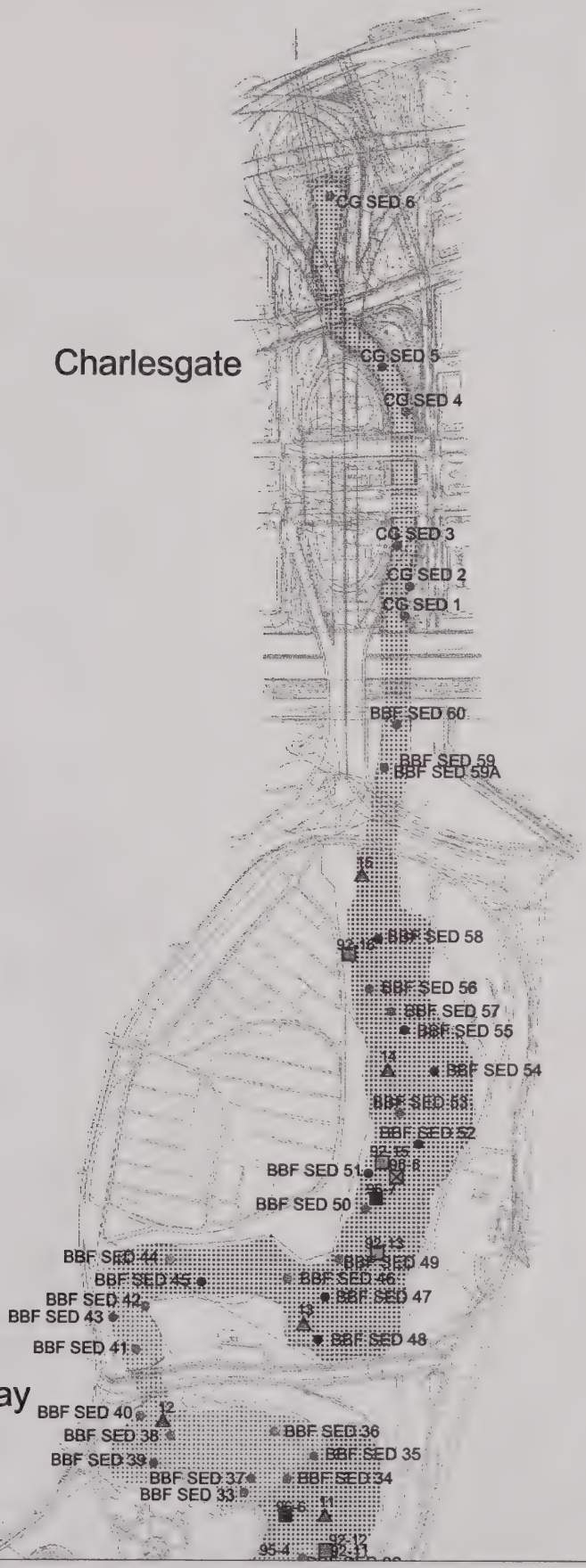

Figure F3-1
Charlesgate and
Back Bay Fens Area
Proposed Disposal Options

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

Unlined
Lined
Out-of-State
RCRA

CDM Camp Dresser & McKee Inc.

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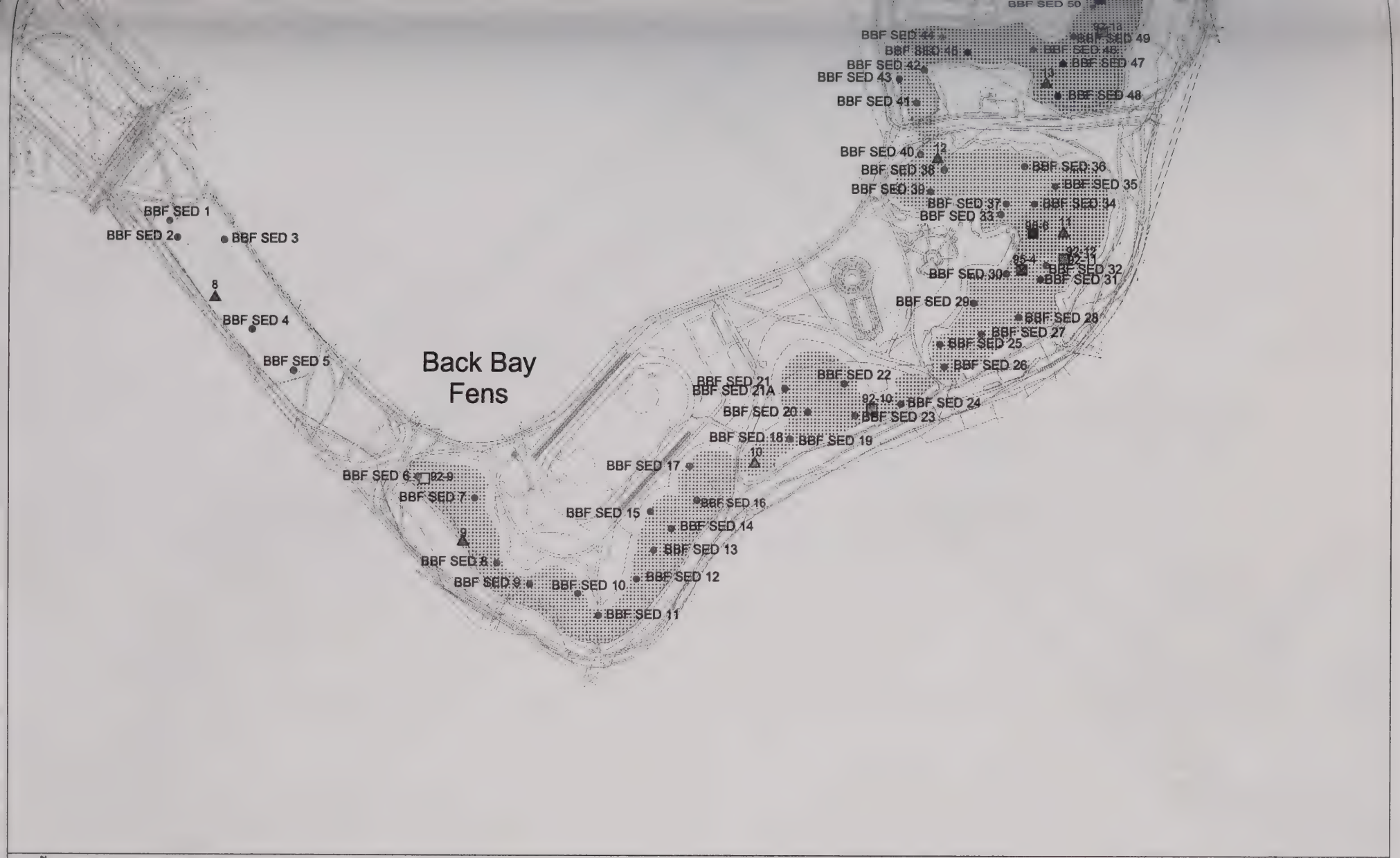

Figure F3-2
Back Bay Fens Area
Proposed Disposal Options

CDM Camp Dresser & McKee Inc.

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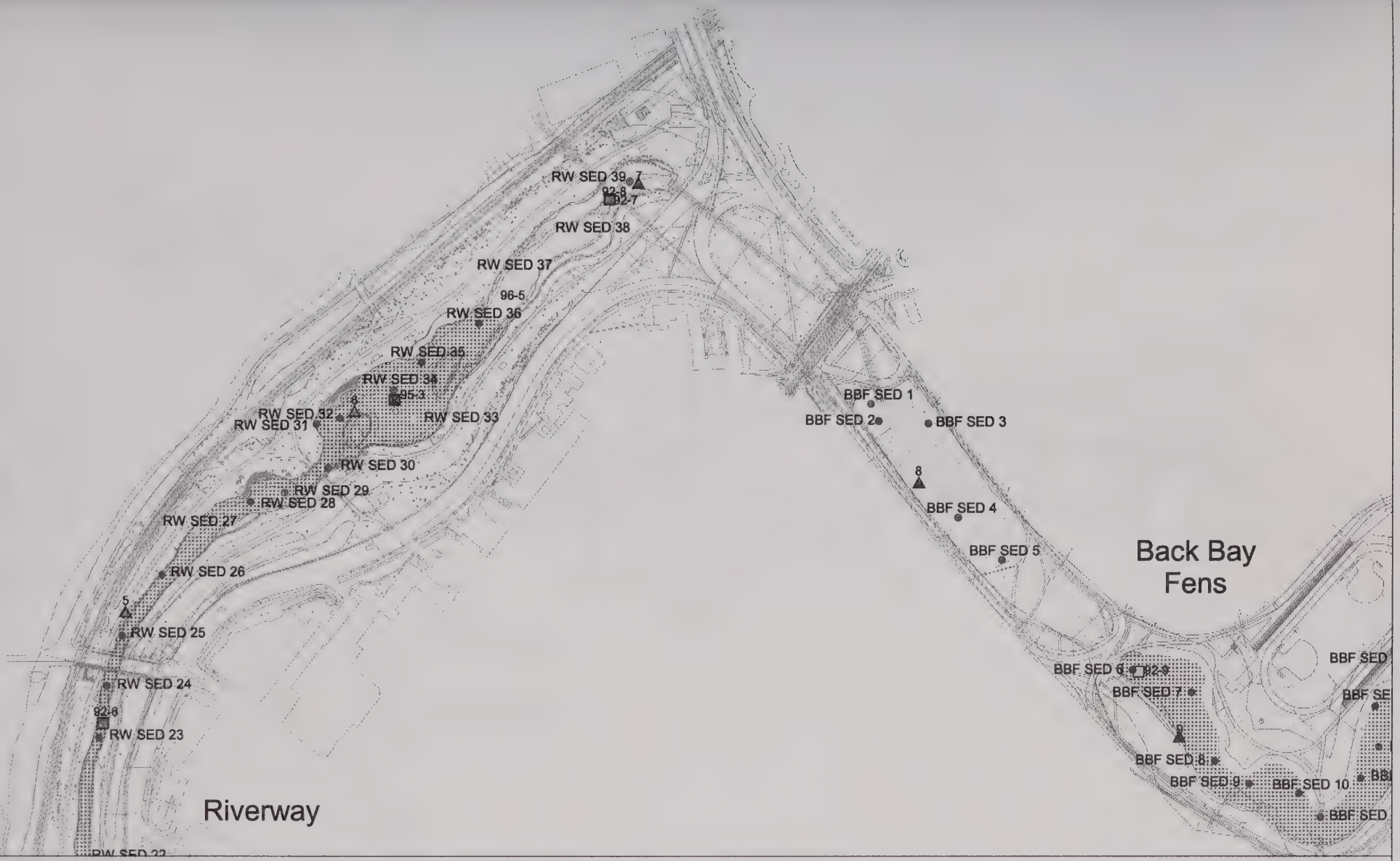

Figure F3-3
Riverway and Back Bay Fens Area
Proposed Disposal Options

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

Unlined
Lined
Out-of-State
RCRA

CDM Camp Dresser & McKee Inc.

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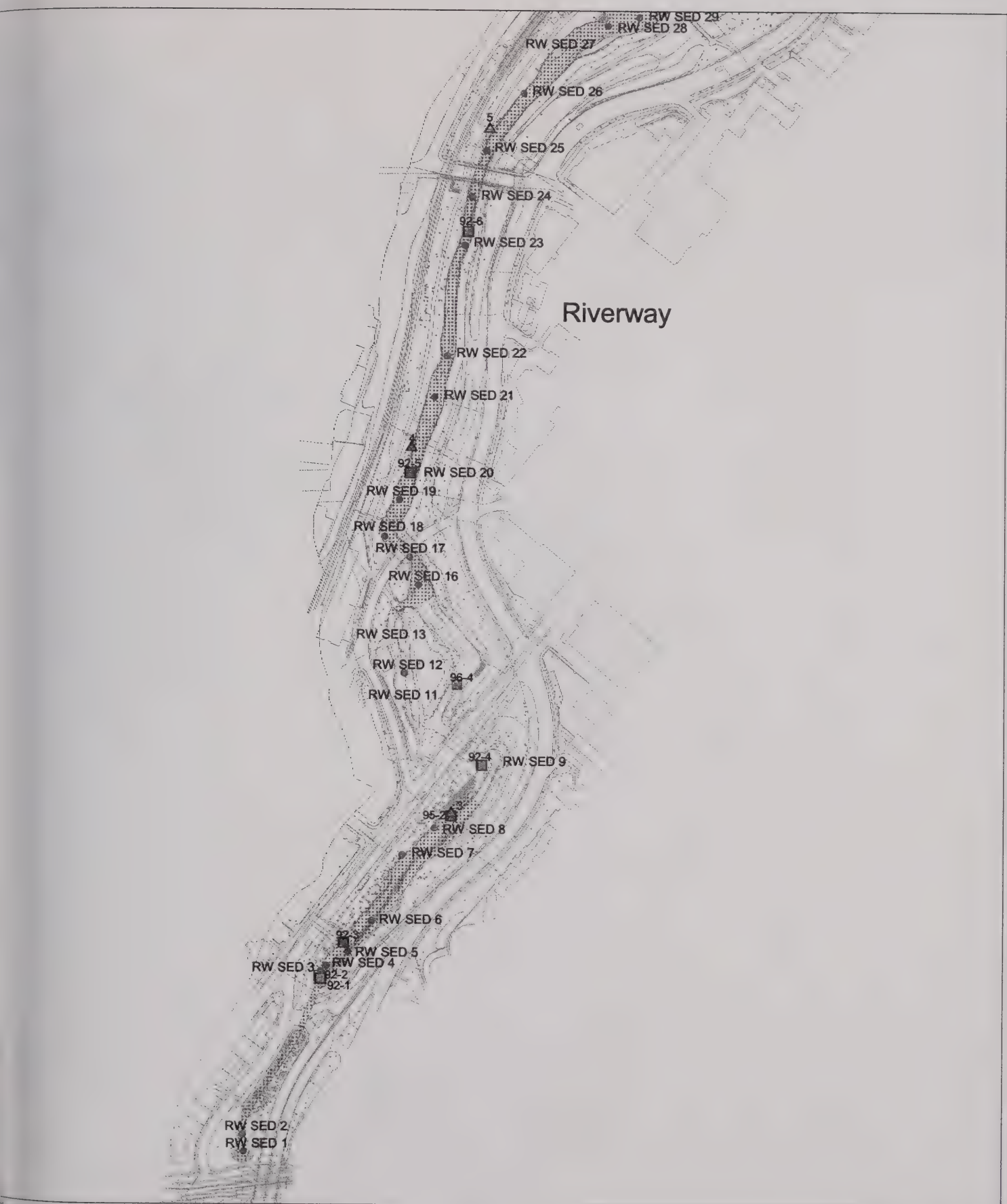

Figure F3-4
Riverway
Proposed Disposal Options

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

Unlined
Lined
Out-of-State
RCRA

CDM Camp Dresser & McKee Inc.

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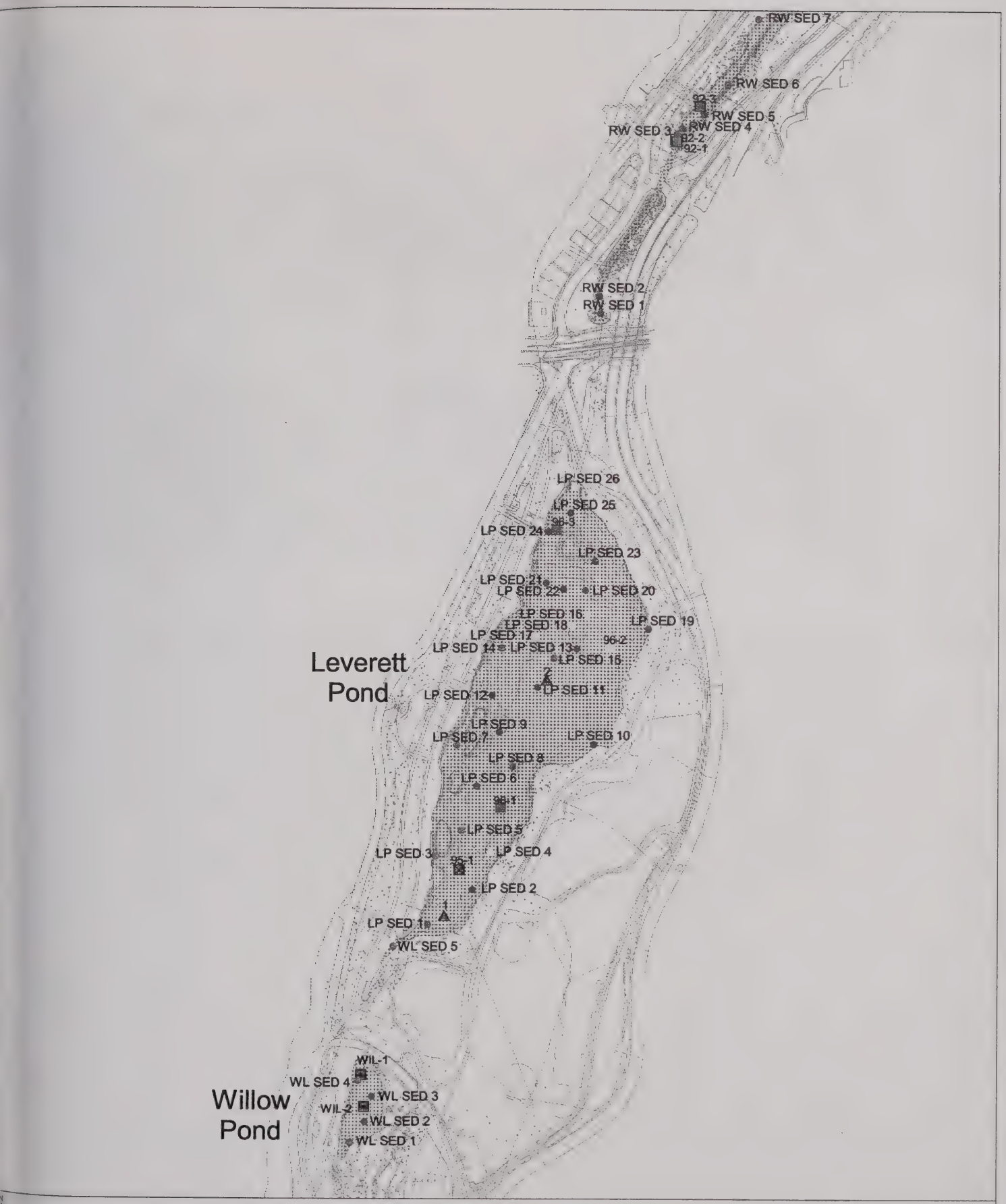

Figure F3-5
Leverett and Willow Pond
Proposed Disposal Options

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

Unlined
Lined
Out-of-State
RCRA

CDM Camp Dresser & McKee Inc.

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Leverett Pond

Sediment dredged from the inlet and the center of the Pond meet the criteria for reuse at an unlined landfill and the remainder will be disposed of at an Out-of-State landfill as shown in Figure F3-5. Generally the highest concentrations of contaminants were found along the centerline of the Pond. The results for samples collected from LP-SED-11, -12 and -13 exceeded the reuse levels for arsenic and the other samples exceeded the total PAH criterion. The highest concentrations of PAHs found are near the Village Brook drain.

Willow Pond

Remedial response actions are continuing at Willow Pond to address releases of petroleum hydrocarbons from the Chestnut Street drain. Currently a boom divides the Pond. The results of CDM's field investigation were consistent with previous studies as petroleum odors and sheen were observed at each sample location. PAHs were found above 100 mg/kg in samples collected from locations WIL-1, WIL-2, WL-SED-2, and WL-SED-3. As shown on Figure F3-6, sediment dredged from Willow Pond will be disposed of at an Out-of-State facility.

Ward's Pond

The results of samples collected from Ward's Pond are below the DEP reuse levels for disposal at an unlined landfill except for samples collected from location WD-SED-1 and WD-SED-5. The results of a sample collected from the fill at location WD-SED-1 exceeded the reactive sulfide regulatory limit of 500 mg/kg and therefore will require disposal at an Out-of-State landfill. The results of a sample collected from the 4 to 6 ft depth interval at WD-SED-5 exceeded the regulatory level for lead at a concentration of 19 mg/L. The total lead concentration in this sample was 190 mg/kg. Since Ward's Pond was not accessible by barge, additional sampling in this area below a depth of 2 feet could not be conducted to verify this sample result. Therefore, sediment removed from this area of the Pond will be disposed of as a hazardous waste. The disposal options for Ward's Pond are shown in Figure F3-6.

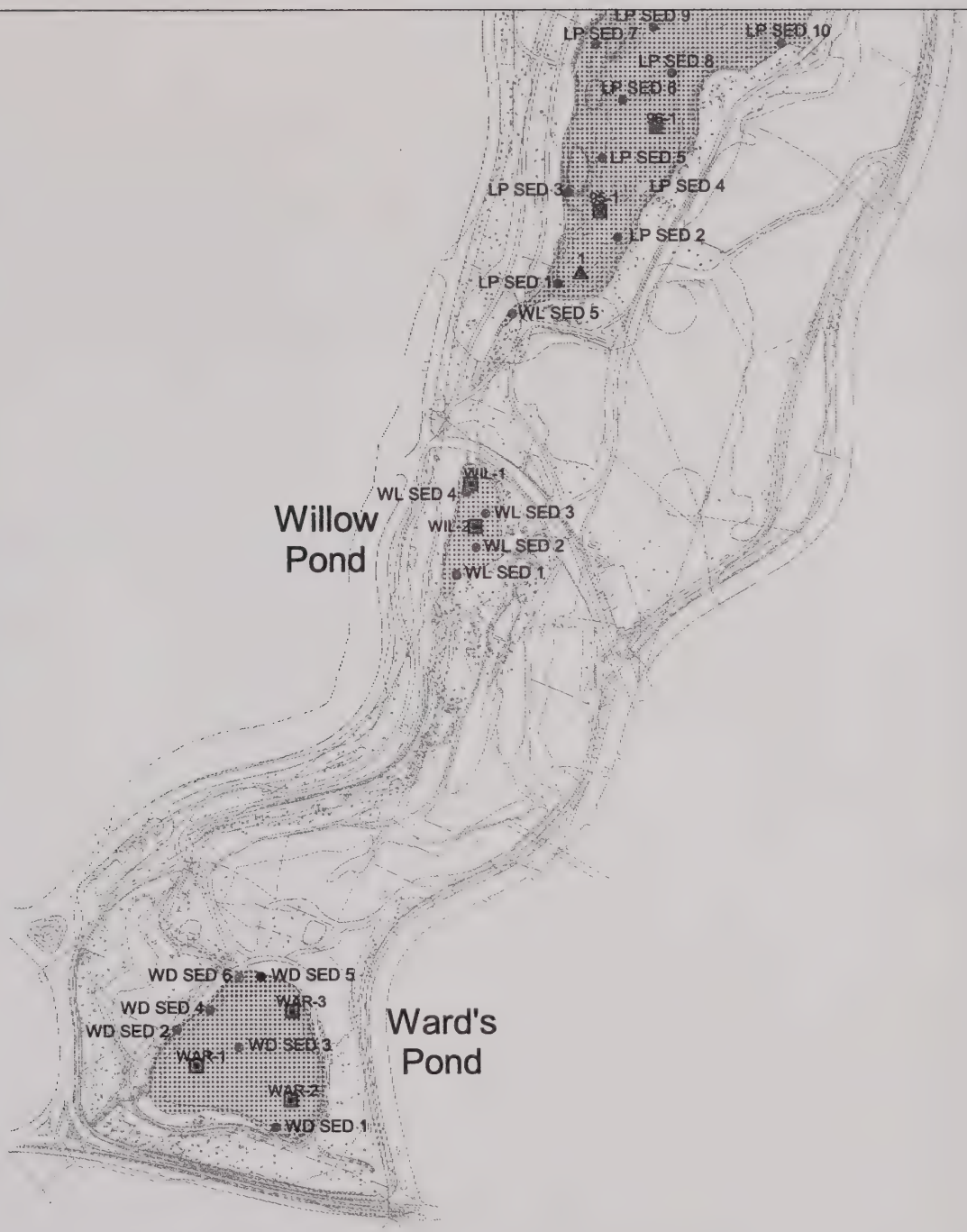

Figure F3-6
Willow and Ward's Pond
Proposed Disposal Options

400 0 400 Feet

ACOE 2000
USGS 1997
ACOE 1996
ACOE 1995
ACOE 1992
CDM 2000

Unlined
Lined
Out-of-State
RCRA

CDM Camp Dresser & McKee Inc.

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ATTACHMENT F-1

SEDIMENT QUALITY TESTING PLAN AND RELEVANT DEP CORRESPONDENCE

Muddy River Restoration Project
Sediment Quality Testing Plan

May, 2000

Contents

Section 1
Introduction

1.1 General Approach

This Sampling and Analysis Plan has been prepared to conduct a characterization of sediments along the Muddy River system. From its source at Jamaica Pond, the Muddy River flows north through three interconnected ponds (i.e., Wards, Willow and Leverett Pond), from Leverett Pond to Park Drive (referred to as the Riverway), and the last reach from Park Drive to the Charles River (referred to as the Back Bay Fens). The Muddy River system is shown on Figure 1-1 provided at the end of this report. The characterization of sediments is part of the Muddy River Restoration Project that includes the potential dredging of the river, modifications to culverts, and other measures to mitigate flooding and improve upon existing water quality. The approximate volumes of sediment proposed for removal in the Environmental Notification Form are as follows:

- Wards Pond 19,340 yds^3
- Willow Pond 9,670 yds^3
- The Riverway 30,000 yds^3
- Leverett Pond 21,788 yds^3
- Back Bay Fens 91,102 yds^3

The objective of the field characterization program is to obtain information to define subsurface conditions at the locations where dredging is proposed to take place. The field program will include the advancement of borings and sediment sample collection. The analytical results will be used to determine the suitability of dredged materials for various disposal options.

Additional tasks include the sampling and analysis of soils collected from borings to be installed for geotechnical purposes, and samples collected of the sediment that has accumulated in culverts. The borings are proposed to collect geotechnical information for the design of enlarged culverts and open channel sections. Select samples will be submitted for analysis for disposal purposes. The proposed boring locations are shown on Figure 1-1.

1.1.1 Previous Field investigations

Two previous investigations have been conducted on sediments in the Muddy River. The sample locations from each investigation are shown on Figure 1-1. In 1996, seven sediment core samples were collected by the U.S. Army Corps of Engineers (ACOE). The cores extended to depths of 40 to 60 inches. The samples were analyzed for total petroleum hydrocarbons, polychlorinated biphenyls (PCBs), cyanide, and lead. The

results of that investigation and a figure that shows the sample locations are provided in Attachment I. The analytical results showed levels of total petroleum hydrocarbons and lead in excess of the Massachusetts Department of Environmental Protection (DEP) Lined and Unlined Landfill Reuse Allowable Contamination Levels for Soil Criteria. The levels of PCBs were also above the Lined Landfill Reuse Criteria and the concentration of lead exceeded the Toxicity Characteristic Leaching Procedure (TCLP) level of 5 mg/L in two samples collected from the Back Bay Fens area. Typically the concentrations of the analytes tested were higher in the top 24-inch samples and in samples collected from the Back Bay Fens area.

In 1998, the U.S. Geologic Survey published screening level data on the sediments from the Back Bay Fens, Riverway and Leverett Pond. Sediment samples were collected from 15 locations and analyzed for total petroleum hydrocarbons, polynuclear aromatic hydrocarbon (PAHs) compounds, PCBs, pesticides, total organic carbon, metals, TCLP metals, grain size, and percent moisture. The samples were collected at depths ranging from 6 inches to 78 inches. The results are summarized and presented in Attachment I. The results were similar to those observed during the 1996 investigation. The concentrations were generally higher in samples collected from the Back Bay Fens area and lower in concentration in samples collected from the Riverway section. The data indicated elevated levels of petroleum hydrocarbons, lead, PAHs, and PCBs.

Recently, five samples were collected by the ACOE from Wards and Willow Pond. The sample locations are shown on Figure 1-1. The results of these samples will be available at the end of May. Sample locations proposed in these areas may be adjusted based on the results of the ACOE sampling.

1.2 Disposal Options

The disposal options evaluated for the dredged material include the following:

- In-State Unlined Landfill;
- In-State Lined Landfill;
- Out-of-State Lined Landfill; and
- RCRA Subtitle C Landfill.

The criteria and requirements of the various landfill disposal options, including frequency of sampling and parameters for analysis are listed in Table 1-1. An asphalt batch recycling facility was contacted, however, it is not likely that the dredged material will meet the criteria due to the high organic content of the sediment material. Based on the results from previous investigations and discussions with various landfill facilities, variations of analytical requirements will be proposed in Section 2.

Table 1-1
Sediment Disposal Landfill Criteria

Muddy River Restoration Project

Disposal Option	Location	Sampling Frequency	Volume Limitations	Criteria	Accept MA EPH/VPH vs. TPH
Lined					
In-State					
Waste Management	MA	Every 500 cubic yards	None	MA Lined Landfill Requirements	YES
Out-of-State					
Waste Management (Crossroads)	ME	Every 500 tons (Negotiable)	None	Full TCLP Suite, Reactivity, pH, PCBs, TOX	YES
Unlined					
Waste Management	MA	Every 500 cubic yards	None	MA Unlined Landfill Requirements	YES
Amalgamated Transportation	MA	Every 500 cubic yards	None	MA Unlined Landfill Requirements	YES
RCRA					
Waste Management	MA	Every 500 cubic yards	None	PCBs< 500 mg/kg	YES
Recycling					
Aggregate Industries	MA	Every 100 cubic yards	None	MA Hot/Cold Batch Plant Requirements	NO

Note: Landfill Disposal criteria are provided as Attachment II.

EPH= Extractable Petroleum Hydrocarbons
VPH= Volatile Petroleum Hydrocarbons
TPH= Total Petroleum Hydrocarbons

Section 2
Field Investigations

2.1 Rationale and Approach

The following subsections describe the rationale and approach, as well as specific procedures for implementing the Sampling and Analysis Plan. Sample locations proposed for the sampling plan were based on the following:

- The results of previous investigations;
- Visual observations of the Muddy River system; and
- The locations of drains, discharge points and above-ground deposits (e.g., sand bars) expected to be dredged that are located along the Muddy River.

Samples will also be collected along the proposed channel center line to obtain representative samples and to define stratification within the material to be dredged. The number of samples proposed for each area was based on the testing frequency required by the landfill disposal facilities.

A site walkover was conducted to evaluate access routes for the drilling and sampling equipment. If access is available via the inner roads that lead to Wards, Willow and Leverett Pond there should be minimal disturbance to wetland areas. Other than the beginning of the Riverway section (Route 9), access is readily available to the sample locations.

The borings will be installed using several methods depending on access limitations and subsurface conditions. The samples will be collected by drive and wash drilling, split-spoon augers or hand augering. The sample method employed will be conducted in a manner that minimizes disturbances of the sediment during sample collection. It is expected that only minimal cuttings will be generated by these methods. Final boring locations will be determined in the field based on factors such as rig access and subsurface conditions. Each boring location will be tied into the survey grid.

Excluding Wards, Willow and Leverett Pond, the project has been distinguished by three areas, the Riverway, Back Bay Fens area, and the Charlesgate area. The Riverway includes samples from Leverett Pond to Park Drive, the Back Bay Fens extends to Ipswich Street, and the Charlesgate area extends to the Charles River.

The results of previous investigations has shown that the highest concentrations were found in samples collected from the Back Bay Fens area. It is expected that most of the sediments will be removed from this area. As shown on Figure 1-1, approximately 140 boring locations are proposed, with most of the borings located in the Back Bay Fens area.

2.2 General Procedures

The following describes the general procedures that will be adhered to in order to ensure the representativeness and integrity of the environmental samples. Up to three stratified samples which best represent specific strata, including native sediment, will be collected from each core.

Core logs will be prepared containing the identification of specific strata, grain size, staining and other visual observations. The following information will be recorded:

- Sampling personnel;
- Weather conditions;
- Date and time of field activities;
- Sample method;
- Position and depth of sample;
- Depth of overlying water;
- Field screening measurements;
- Instrumentation used and any deviations from the proposed methodology;
- Visual/olfactory observations; and
- Physical description of the material and geologic classification.

The samples will be analyzed for the constituents listed below.

Parameter	Test Method
Petroleum Hydrocarbons	DEP VPH/EPH Method with GC/MS of PAHs
RCRA 8 Metals	EPA Methods 6010, 7471, 7740, 7840
Pesticides/PCBs	EPA Method 8080
Conductance	EPA Method 120.1, 9050
TCLP Metals	EPA Method 1311, SW846
Reactivity Sulfide & Cyanide	EPA Method 7.3
Corrosivity	EPA Method 9040B/9045C

- Percent Water — Computed
- Combined Sieve and Hydrometer — ASTM D422-63
- Paint Filter Test — EPA Method 9095A

All samples will be analyzed by EPA/DEP approved analytical procedures. Detection limits for samples will be consistent with regulatory limits. Quality Assurance/Quality Control (QA/QC) samples will be collected and analyzed and will include duplicate samples, trip blanks and matrix spike samples. These samples will be used to test for consistency and reproducibility for the overall sampling and analytical process. One out of every 20 samples will be collected for duplicate analysis. The analytical laboratories will be required to perform matrix spike analyses. The frequency of collecting samples for trip blank analysis will be established once the sampling program has been initiated and will be dependent on the number of samples that can be collected each day. All of the QA/QC samples will be used to validate the analytical results for samples received from the laboratory.

2.2.1 Proposed Analytical Scenarios

Although the samples collected to date have been analyzed for total petroleum hydrocarbons, it is proposed that DEP's volatile petroleum hydrocarbon (VPH) and extractable petroleum hydrocarbon (EPH) methods rather than the TPH method are used. The naturally occurring substances and fine particulate that are generally found in sediment present interferences to the TPH method and result in false positives. As listed in Table 1-1, the disposal facilities contacted would accept the VPH and EPH data as a measure of petroleum hydrocarbons.

Given the available data and the expected volume of dredging, different sampling scenarios are proposed for each area. For the Back Bay Fens area, ten previous samples were analyzed for TPH, total and TCLP inorganics, organochlorine pesticides, PCBs, PAHs, total organic carbon (TOC), grain size, and percent moisture. The results showed levels above the DEP's Lined Landfill criteria for TPH, PAHs, PCBs, and lead. The concentrations of PAHs, PCBs and lead were consistent in most of the samples collected by the USGS. Concentrations of PAHs ranged from 58 mg/kg to 270 mg/kg, PCBs ranged from 0.04 mg/kg to 3.4 mg/kg, and lead from 156 mg/kg to 1,410 mg/kg. Based on these results, as well as two samples collected by the ACOE that TCLP regulatory levels for lead were exceeded, samples collected from the Back Bay Fens and Charlesgate areas will be analyzed for each of the parameters listed in Section 2.2. There is the possibility that this area may be dredged in the dry. As such, additional sediment material will be collected at each proposed sample location and will be composited and measured for the paint filter liquid test to determine whether this material would require filtration prior to disposal.

Approximately 20 samples will be submitted to the laboratory for the paint filter liquid test.

For the Riverway area, nine samples have been previously collected for analysis. The concentrations were generally lower than those observed at the Back Bay Fens area. The concentrations of PCBs were below 2 mg/kg for each of the samples analyzed. The concentrations of lead ranged from 210 to 1,500 mg/kg, however only two samples exceeded the Unlined Landfill Disposal Criteria of 1,000 mg/kg. There were no exceedances of the TCLP regulatory levels for lead in the six samples that were analyzed. Three samples exceeded the total semivolatile organic compounds Unlined and Lined Landfill Disposal criteria of 100 mg/kg. Concentrations of PAHs ranged from 61 mg/kg to 342 mg/kg. Based on these results, it is proposed that only the odd-numbered samples are analyzed for the full suite of parameters (excluding the paint filter test). The even-numbered samples would be analyzed for VPH, EPH, RCRA 8 metals, and TCLP metals.

For Wards, Willow and Leverett Pond, existing data are only available for Leverett Pond. The data for Wards and Willow Pond will be available at the end of May. As such, the full suite of parameters (excluding the paint filter test) will be analyzed. Five samples were collected from Leverett Pond. The results showed levels of PCBs and lead below the Unlined Landfill Disposal criteria. The results of PAHs were above the Unlined and Lined Landfill Disposal criteria of 100 mg/kg. Based on these results, it is proposed that only the odd-numbered samples are analyzed for the full suite of parameters (excluding the paint filter test). The even-numbered samples would be analyzed for VPH, EPH, RCRA 8 metals, and TCLP metals. The proposed sampling frequency and parameters for analysis are summarized by each area and listed in Table 2-1.

2.2.2 Additional Sampling and Analysis Testing

As discussed in Section 1, soil samples will be collected from the geotechnical borings and analyzed for the parameters listed in Section 2.2. Approximately three samples will be collected from the 12 sampling locations. Two samples will be collected of the fill material and one will be collected from the bottom of the boring. Additional samples will be collected if elevated headspace measurements are observed.

Samples will also be collected from the sediment material that has deposited in the culverts. The samples will be collected from each of the ends of the culvert and sampled for the parameters that are listed in Section 2.2. Estimates of the volume of sediment contained within the culvert and the appropriate disposal facility will be determined from these samples.

Table 2-1
Sampling Frequency and Proposed Parameters for Analysis

Muddy River Restoration Project

Area of Study	Proposed Excavation Volume	Existing Samples	Proposed Samples	Sampling Frequency (samples/yd^3)	Analyses
Wards Pond	19,340 yd^3	3	36	496	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP metals, Reactivity, Conductance, and Sieve & Hydrometer
Willow Pond	9,670 yd^3	2	18	484	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP metals, Reactivity, Conductance, and Sieve & Hydrometer
Leverett Pond	21,788 yd^3	8	39 (odd-numbered)	253	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP metals, Reactivity, Conductance, and Sieve & Hydrometer
			39 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP metals
Riverway	30,000 yd^3	9	60 (odd-numbered)	238	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP metals, Reactivity, Conductance, and Sieve & Hydrometer
			57 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP metals
Back Bay Fens Area (includes Charlesgate Area)	91,102 yd^3	12	198	434	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP metals, Reactivity, Conductance, and Sieve & Hydrometer
			20 composite samples		paint filter liquid test

2.2.3 Data Management

The analytical results from the sediment characterization program will be entered electronically into the geographical information system (GIS) data base. Spread sheets of these data will be prepared in which the data are summarized and compared, as appropriate, with sediment and/or landfill disposal criteria. This information will also be presented graphically to illustrate the results and identify trends if present.

Attachment I

Previous Investigations

Table C-8: Results of 1996 Corps Muddy River Sediment Tests

Sample	Depth of Core	Section	TPH (mg/kg)	PCBs (mg/kg)	Cyanide (mg/kg)	Lead (mg/kg)	TCLP Lead (mg/L)
96-1	42"	Top 16"	16000	0.37	< 0.5	880	-
		Bottom 16"	7200	0.40	< 0.5	910	-
96-2	48"	Top 24"	24000	0.97	< 0.5	1000	3.1
		Bottom 24"	6100	0.20	< 0.4	340	-
96-3	50"	Top 25"	790	0.03	< 0.3	680	-
		Bottom 25"	2600	0.27	< 0.3	220	-
96-4	40"	Top 20"	2700	0.05	0.4	82	-
		Bottom 20"	6400	0.27	< 0.3	260	-
96-5	48"	Top 24"	37000	1.1	3.4	1500	2.7
		Bottom 24"	2400	0.18	< 0.5	320	-
96-6	60"	Top 24"	38000	8.1	5.7	2000	5.4
		Bottom 24"	22000	1.3	< 0.5	1600	4.1
96-7	60"	Top 20"	36000	9.1	2	1800	6.0
		Bottom 33"	61	1.2	0.8	300	-
	Mean	Top	22070	2.8	1.4	1140	-
	Mean	Bottom	6680	0.5	< 0.4	560	-

Notes:

1. Samples collected on 12 April 1996
2. Samples 96-4 and 96-7 taken from within *Phragmites*

SUPPLEMENTAL DATA

Concentrations of trace metals, organic compounds, total organic carbon, grain-size distributions, percentage of moisture, and toxicity characteristic leaching procedure were analyzed in streambed sediment samples collected at 15 sites in the Muddy River, Massachusetts, in October 1997. These data can be used in conjunction with those presented on the accompanying map report to assist in the design of a remedial program for Muddy River sediments such a program might consider including the advisability of sediment removal, and optimal disposal and re-use options for the dredged sediments.

REFERENCES USED IN SUPPLEMENTAL DATA TABLES

American Public Health Association, American Water Works Association, and Water Pollution Control Association, 1995, Standard methods for the examination of water and wastewater, 19th ed: Washington, D.C., APHA (variously paginated)

American Society for Testing and Materials, 1980, Natural Building Stones; Soil and Rock: Annual Book of ASTM Standards, part 19, Philadelphia, 634 p.

U.S. Environmental Protection Agency, 1983, Methods for chemical analysis of water and wastes: U.S. Environmental Protection Agency, Cincinnati, Ohio, EPA-600/4-79-020, March 1979, Revised March 1983.

_____1992, Test methods for evaluating solid waste, physical/chemical methods SW-846, 3rd ed., vol. IC, Chap. 1, sec. 8.4, rev. 0, final update, 7/92.

_____1996, Test methods for evaluating solid waste, physical/chemical methods: SW-846, 3rd ed., Rev. 1 and 2, final update I, 7/92 and final update III, 12/96.

Table 1. Geographic distribution of trace metals and organic compounds in sediment cores, Muddy River, Massachusetts, October 1997

[All concentrations are in parts per million. **Trace metals:** Analyses were performed in accordance with sample preparation method 3050B and ICP method 6010B (U.S. Environmental Protection Agency, 1996, rev. 1 and 2). **Mercury**: Analyses were performed in accordance with method 245.5 (U.S. Environmental Protection Agency, 1983). **Organochlorine pesticides and polychlorinate biphenyls**: Sample preparation was done by the EPS Multi-Medial Consensus Organics Protocol-Revised 8/87. A macro-Florisil column was used for the sample cleanup. The analysis was carried out using high resolution capillary column chromatography. The 30-m dual capillary system consists of J&W DB-1701 and J&W DB-5, both with a 0.25 mm ID and a 0.2 micrometer fil thickness (Peter Philbrook, Office of Measurement and Evaluation Division of the U.S. Environmental Protection Agency, Region I, written commun., 1997) . **Polyaromatic and total petroleum hydrocarbons:** Sample analysis was performed according to EPA Region I Procedure for Polyaromatic Hydrocarbons in Sediment Samples PAHSELL1.SOP. The extracts were analyzed on the gas chromatograph/mass spectrometer using the selected ion monitoring Dick Siscanaw, Office of Measurement and Evaluation Division of the U.S. Environmental Protection Agency, Region I, written commun., 1997) . D, duplicate split sample; No., number; e, estimated; <, less than method detection limit]

	TRACE METALS							
Station No.	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
1	<40	3	122	203	919	1.4	29.3	574
2	<60	<2.7	41.3	240	657	1.2	29.2	527
3	<30	5	91.9	281	1,100	2	39.6	557
4	<30	<2.8	23.1	116	210	e6	18.4	225
5	<20	<2.7	49.5	148	532	1.4	24.8	276
5-D	<25	<3.0	56.7	169	590	1.3	27.8	310
6	<30	6	112	448	925	2.3	43.2	879
7	<60	<2.6	37.9	225	360	1	31.6	481
8	<30	<2.8	26.6	85.7	156	1.4	15.5	220
9	<45	8.3	344	710	1,320	6.3	70.6	1,070
10	<60	14.8	182	574	979	3.3	59.9	982
11	<25	6.9	66.3	389	1,270	2.8	37.3	778
12	<30	8.2	101	416	1,370	2.6	45.5	880
13	<35	8.9	78.6	478	1,410	3	44.6	882
14	<30	7.9	87.6	387	1,360	3.2	40.1	794
15	<50	9.7	78.2	605	1,260	2.5	44.8	965

Table 1. Geographic distribution of trace metals and organic compounds in sediment cores, Muddy River, Massachusetts, October 1997—*Continued*

ORGANOCHLORINE PESTICIDES

Station No.	Aldrin	Alpha-bhc	Beta-bhc	Delta-bhc	Delta-bah	Gamma-bah	Alpha-chlordane	Gamma-chlordane	Chlor-dane (Tech)	"4,4'-DDD"	"4,4'-DDE"
1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.038	0.03	<2.0	3.2	0.23
2	.022	<.007	<.007	<.007	<.007	<.007	.023	<.007	<.7	.37	.16
3	<.01	<.01	<.01	<.01	<.01	<.01	.11	.091	<.1	2	.26
4	<.01	<.01	<.01	<.01	<.01	<.01	.035	.019	<.1	.56	.12
5	<.01	<.01	<.01	<.01	<.01	<.01	.041	.035	<.1	1.12	.099
6	<.01	<.01	<.01	<.01	<.01	<.01	.12	.096	<.1	.5	.16
7	<.008	<.008	<.008	<.008	<.008	<.008	.008	<.008	<.8	.026	.011
8	<.003	<.003	<.003	<.003	<.003	<.003	.0069	<.003	<.3	.046	.012
9	<.02	<.02	<.02	<.02	<.02	<.02	.088	.096	<.2	1.3	.38
10	<.01	<.01	<.01	<.01	<.01	<.01	.041	.04	<.1	.62	.31
11	<.01	<.01	<.01	<.01	<.01	<.01	.081	.049	<.1	.63	.17
12	<.02	<.02	<.02	<.02	<.02	<.02	.1	.062	<.2	.66	.19
13	<.02	<.02	<.02	<.02	<.02	<.02	.072	.05	<.2	.51	.16
14	.073	<.02	<.02	<.02	<.02	<.02	.089	.058	<.2	.63	.18
14-D	.075	<.02	<.02	<.02	<.02	<.02	.072	.051	<.2	.53	.14
15	.048	<.02	<.02	<.02	<.02	<.02	.053	.034	<.2	.29	.15

ORGANOCHLORINE PESTICIDES—*Continued*

Station No.	"4,4'-DDT"	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin	Endrin alde-hyde	Endrin ketone	Hepta-chlor	Hepta-chlor epoxide	Methox-ychlor	Toxa-phen
1	0.11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2.0
2	.038	<.007	<.007	<.007	<.007	<.007	<.007	.1	<.007	<.007	<.007	<.7
3	.05	.07	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.1
4	.033	.013	<.01	<.01	<.01	<.01	<.01	.095	<.01	<.01	<.01	<.1
5	.013	.015	<.01	<.01	<.01	<.01	<.01	.0093	<.01	<.01	<.01	<.1
6	.028	.039	<.01	<.01	<.01	<.01	<.01	.037	<.01	<.01	<.01	<.1
7	.021	<.008	<.008	<.008	<.008	<.008	<.008	.046	<.008	<.008	<.008	<.8
8	.013	<.003	<.003	<.003	<.003	<.003	<.003	.043	<.003	<.003	<.003	<.3
9	.055	.036	<.02	<.02	<.02	<.02	<.02	.056	<.02	<.02	<.02	<.2
10	.04	.015	.046	<.01	<.01	.026	<.01	<.01	<.01	<.01	<.01	<.1
11	.34	.05	<.01	.099	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.1
12	.028	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.2
13	.011	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.2
14	<.02	.057	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.2
14-D	<.02	.046	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
15	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02

Table 1. Geographic distribution of trace metals and organic compounds in sediment cores, Muddy River, Massachusetts, October 1997—*Continued*

Station No.	Aroclor								
	1016	1221	1232	1242	1248	1254	1260	1262	1268
1	<0.04	<0.04	<0.04	0.078	<0.04	<0.04	0.17	<0.04	<0.04
2	<.04	<.04	<.04	<.04	<.04	<.04	.11	<.04	<.04
3	<.04	<.04	<.04	.22	<.04	<.04	<.04	<.04	<.04
4	<.03	<.03	<.03	.081	<.03	<.03	.092	<.03	<.03
5	<.03	<.03	<.03	<.03	<.03	.14	.14	<.03	<.03
6	<.06	<.06	<.06	<.06	<.06	.43	.23	<.06	<.06
7	<.04	<.04	<.04	<.04	<.04	<.04	<.04	<.04	<.04
8	<.04	<.04	<.04	<.04	<.04	.04	<.04	<.04	<.04
9	<.06	<.06	<.06	.33	<.06	1.3	.93	<.06	<.06
10	<.06	<.06	<.06	.16	<.06	.77	.45	<.06	<.06
11	<.04	<.04	<.04	.56	<.04	1.7	.71	<.04	<.04
12	<.04	<.04	<.04	.57	<.04	2.2	.62	<.04	<.04
13	<.05	<.05	<.05	.67	<.05	1.7	.73	<.05	<.05
14	<.04	<.04	<.04	.6	<.04	1.9	.58	<.04	<.04
14-D	<.04	<.04	<.04	.67	<.04	1.7	.6	<.04	<.04
15	<.05	<.05	<.05	.43	<.05	1.6	.59	<.05	<.05

Station No.	POLYAROMATIC HYDROCARBONS								
	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo (a) anthracene	Benzo (b) fluoran-thene	Benzo (k) fluoran-thene	Benzo (a) pyrene	Benzo (ghi) perylene	Biphen
1	1.7	0.43	3.8	13	19	7	13	8.7	0.077
2	1.9	.53	5.5	19	26	8	17	11	.087
3	1.2	.23	3.3	8.5	11	4	7.8	5.1	.085
4	5.2	.43	9.2	24	30	8.6	23	13	.34
5	.54	.13	1.3	4.5	6.2	2.4	4.3	3	<.045
6	.57	.23	1.6	6.1	9.5	3.6	6.3	4.9	<.084
7	.76	.48	3.3	12	18	6.1	11	7.9	.08
8	.46	.39	1.7	7.9	18	6.2	11	8.5	.059
9	2.9	.81	8	18	26	9.4	18	13	.44
10	.38	.2	.66	3.8	7.8	2.3	4.6	3.8	<.086
11	1.9	.36	3.5	11	15	5.7	11	6.9	.12
12	1.1	.3	2.3	8.9	13	5.1	8.8	6.2	.099
13	1.4	.37	2.8	9.3	13	5.3	8.8	6.1	.14
14	.96	.33	2.2	7.7	11	4.6	8.1	5.6	.1
14-D	1.5	.44	3.1	10	16	6.2	11	7.5	.14
15	1.1	.32	2.3	8.5	13	4.3	8.7	5.8	.14

Table 1. Geographic distribution of trace metals and organic compounds in sediment cores, Muddy River, Massachusetts, October 1997—*Continued*

POLYAROMATIC HYDROCARBONS—*Continued*									
Station No.	Chrysene	Dibenzo (a.h) anthracene	Fluoran-thene	Fluorene	"Indeon (1,2,3-cd) pyrene"	Naph-thalene	2-Methyl-Naptha-lene	Phenan-threne	Pyrene
1	17	2.5	37	2.7	11	0.53	0.56	20	31
2	24	3.3	55	2.8	75	.41	.34	27	44
3	10	1.5	22	1.6	6.3	.5	.29	14	18
4	27	3.8	64	4.9	16	2.7	1.6	53	55
5	5.9	.8	12	.63	3.8	.17	.13	5.6	9.8
6	8.4	1.2	16	.99	5.7	.18	.43	8.2	14
7	16	2.2	32	1.3	10	.39	.28	11	26
8	12	2.2	19	.72	10	.27	.172	4.9	14
9	22	3	49	4	15	3	1.3	37	39
10	6.1	.86	10	.46	4.2	.27	.22	4.3	8.5
11	14	1.9	26	2.2	8.5	.49	1.2	20	23
12	12	1.5	23	1.5	7.3	.3	.34	14	20
13	12	1.5	24	2	7.3	.59	.55	16	21
14	10	1.5	20	1.3	6.7	.29	.43	11	18
14-D	14	2	25	1.9	9	.49	.51	17	23
15	11	1.5	21	1.5	7.1	.47	.51	13	19

Table 2. Geographic distribution of total petroleum hydrocarbon in sediment cores, Muddy River, Massachusetts, October 1997

[**Total petroleum hydrocarbons:** Concentrations are in parts per million. Standard analyses were performed in accordance with Methods for Chemical Analysis of Water and Wastes (U.S. Environmental Protection Agency, 1983), EPA-600/4/79-020, Test; Methods for Evaluating Solid Waste, SW-846 (U.S. Environmental Protection Agency, 1996), or standard methods for the examination of water and wastewater (American Public Health Association, 1995. D, duplicate split sample; No., number]

Station No.	Total petroleum hydrocarbon	Station No.	Total petroleum hydrocarbon
1	27,000	9	28,000
2	21,000	10	19,000
3	25,000	11	22,000
4	9,800	12	32,000
5	11,000	13	34,000
6	30,000	14	34,000
7	16,000	14-D	30,000
8	4,700	15	22,000

Table 3. Geographic distribution of total organic carbon in sediment cores, Muddy River, Massachusetts, October 199

[All concentrations are in parts per million. **Total organic carbon:** Analyses were performed in accordance with New England Regional Laboratory Standard Operating Procedure (SOP) 14.1 using a Dohrmann DC-190 TOC Analyzer (William J. Andrade, Office of Measurement and Evaluation Division of the U.S. Environmental Protection Agency. Regio I, written commun., 1997). D, duplicate split sample; No., number]

Station No.	Total organic carbon	Station No.	Total organic carbon
1	93,143	9	130,185
2	86,477	10	101,172
3	86,523	11	97,130
4	70,333	12	97,282
5	49,255	13	127,389
6	105,433	14	128,548
7	70,381	14-D	118,244
8	39,100	15	114,825

Table 4. Geographic distribution of grain size in sediment cores, Muddy River, Massachusetts, October 1997

[Grain-analysis was performed using ASTM Method D422-63 (American Society for Testing and Materials, 1980). **Gravel:** sieve number 4, greater than 4.75 millimeters. **Coarse sand:** Sieve number 10, less than 4.75 millimeters, greater than 2 millimeters. **Medium sand:** sieve number 40, less than 2.0 millimeters, greater than 0.425 millimeter. **Fine sand:** sieve number 200, less than 0.425 millimeter, greater than 0.075 millimeter. **Silt and clay:** less than 0.075 millimeter. D, duplicate split sample; No., number]

Station No.	Grain size (as percentage retained)				
	Gravel	Coarse sand	Medium sand	Fine sand	Silt and clay
1	0	0.4	12	28.1	57.4
2	1.3	8.67	29.3	23.4	37.4
3	.2	.4	10	37.7	51.7
4	1.9	6.6	34.7	33.5	23.3
5	2.1	7	24.5	39.7	26.7
6	.1	1.2	26.8	23.7	48.2
7	.4	5.4	31.6	24	61.4
8	6.4	11.5	44.6	22.9	14.6
9	0	4.1	31.1	22.2	42.6
10	.1	2.9	28.2	25.1	43.7
11	8	.2	10.1	60.3	29.4
12	.3	1.5	15.9	46	36.3
13	0	2.3	11.2	26.5	60
14	0	2.2	16.6	30.3	50.9
14-D	0	.5	16.3	31.2	52
15	0	.2	18.3	23.8	42.9

Table 5. Geographic distribution of percentage of moisture in sediment cores, Muddy River, Massachusetts, October 1997

[D, duplicate split sample; No., number]

Station No.	Percentage of moisture	Station No.	Percentage of moisture
1	58	9	73
2	56	10	71
3	56	11	54
4	43	12	61
5	45	13	64
6	70	14	58
7	58	14-D	59
8	50	15	40

Table 6. Geographic distribution of Toxicity Characteristic Leaching Procedure constituents in sediment cores, Muddy River, Massachusetts, October 1997

[**Trace metals:** Concentrations are in parts per million. TCLP was performed in accordance with method 1311 (U.S. Environmental Protection Agency, 1992). Sample preparation method 3010A and ICP method 6010B (U.S. Environmental Protection Agency 1996). **Mercury:** Only samples with a total mercury concentration of about 4 ppm or greater were analyzed. TCLP was perfomred in accordance with method 7470A (U.S. Environmental Protection Agency, 1996). D, duplicate split sample; No., number; <, less than method detection limit; --, not sampled]

Station No.	Silver	Arsenic	Barium	Cadmium	Chromium	Mercury	Lead	Selenium
1	<0.06	<0.25	0.43	<0.06	<0.03	--	1.1	<0.20
2	<.06	<.25	.56	<.06	<.03	--	1.4	<.20
3	<.06	<.25	.54	<.06	<.03	--	2.2	<.20
4	<.06	<.25	.4	<.06	<.03	<0.50	.76	<.20
5	<.06	<.25	.44	<.06	<.03	--	1.7	<.20
5-D	<.06	<.25	.47	<.06	<.03	--	1.8	<.20
6	<.06	<.25	.5	<.06	<.03	--	.79	<.20
7	<.06	<.25	.45	<.06	<.03	--	.28	<.20
8	<.06	<.25	.29	<.06	<.03	--	.7	<.20
9	<.06	<.25	.53	.06	<.03	<.50	1.8	<.20
10	<.06	<.25	.45	.14	<.03	<.50	.87	<.20
11	<.06	<.25	.46	<.06	<.03	--	1.2	<.20
12	<.06	<.25	.5	<.06	<.03	--	1.4	<.20
13	<.06	<.25	.51	<.06	<.03	--	1.3	<.20
14	<.06	<.25	.61	<.08	<.03	--	2.9	<.20
15	<.06	<.25	.64	<.10	<.03	--	2.8	<.20

Station No.	*Location*	*Parameter(s) in Excess of DEP Lined Landfill Reuse Criteria*	*Approximate Depth of Contamination*
1	Southern portion of Leverett Pond	PAHs, TPH	2.5'
2	Central portion of Leverett Pond	As, PAHs, TPH	2.5'
3	Muddy River; approx. 480' northeast of the Tannery Brook Drain	PAHs, TPH	2.5'
4	Muddy River; approx. 220' northeast of the Longwood Avenue Drain	TPH, PAHs	2'
5	Muddy River; approx. 100' north-northeast of the Longwood Avenue Bridge	TPH	1.5'
6	Muddy River; approx. 220' northeast of the Muddy River Footbridge	TPH	3'
7	Adjacent and prior to the Brookline Gatehouse	As, PAHs, TPH	0.5'
8	Upper Fens; between Brookline Avenue Gatehouse and the Emmanuel College Drain (Overflow)	PAHs	2.5'
9	Back Bay Fens; approx. 220' southeast of the Fen Bridge	As, PCBs, PAHs, TPH	1.5'
10	Back Bay Fens; southwestern side of lagoon area and approx. 80' east-northeast of western footbridge	As, TPH	1.5'
11	Back Bay Fens; approx. 90' north of Stony Brook Overflow (Boston Gatehouse No. 1)	PCBs, PAHs, TPH	6.5'
12	Back Bay Fens; approx. 40' south of the Agassiz Bridge	PCBs, PAHs, TPH	6.5'
13	Back Bay Fens; approx. 340' east-northeast of the Agassiz Bridge	PCBs, PAHs, TPH	2.5'
14	Back Bay Fens; approx. 600' south of the Boylston Street Bridge	PCBs, PAHs, TPH	0.5'
15	Back Bay Fens; approx. 160' south of the Boylston Street Bridge	PCBs, PAHs, TPH	3'

Notes:

As - arsenic
PCBs - polychlorinated biphenyls
PAHs - polyaromatic hydrocarbons
TPH - total petroleum hydrocarbons

Total Lead and TCLP Lead Sediment Sample Results
Muddy River Restoration Project

	Total Lead mg/kg	TCLP Lead mg/L
Samples Collected by the ACOE (1996)		
96-2 (Top 24")	1000	3.1
96-5 (Top 24")	1500	2.7
96-6 (Top 24")	**2000**	**5.4**
96-6 (Bottom 24")	1600	4.1
96-7 (Top 20")	**1800**	**6**
Samples collected by the USGS (1997)		
Station No.		
1	919	1.1
2	657	1.4
3	1100	2.2
4	210	0.76
5	532/590	1.7/1.8
6	925	0.79
7	360	0.28
8	156	0.7
9	1320	1.8
10	979	0.87
11	1270	1.2
12	1370	1.4
13	1410	1.3
14	1360	2.9
15	1260	2.8

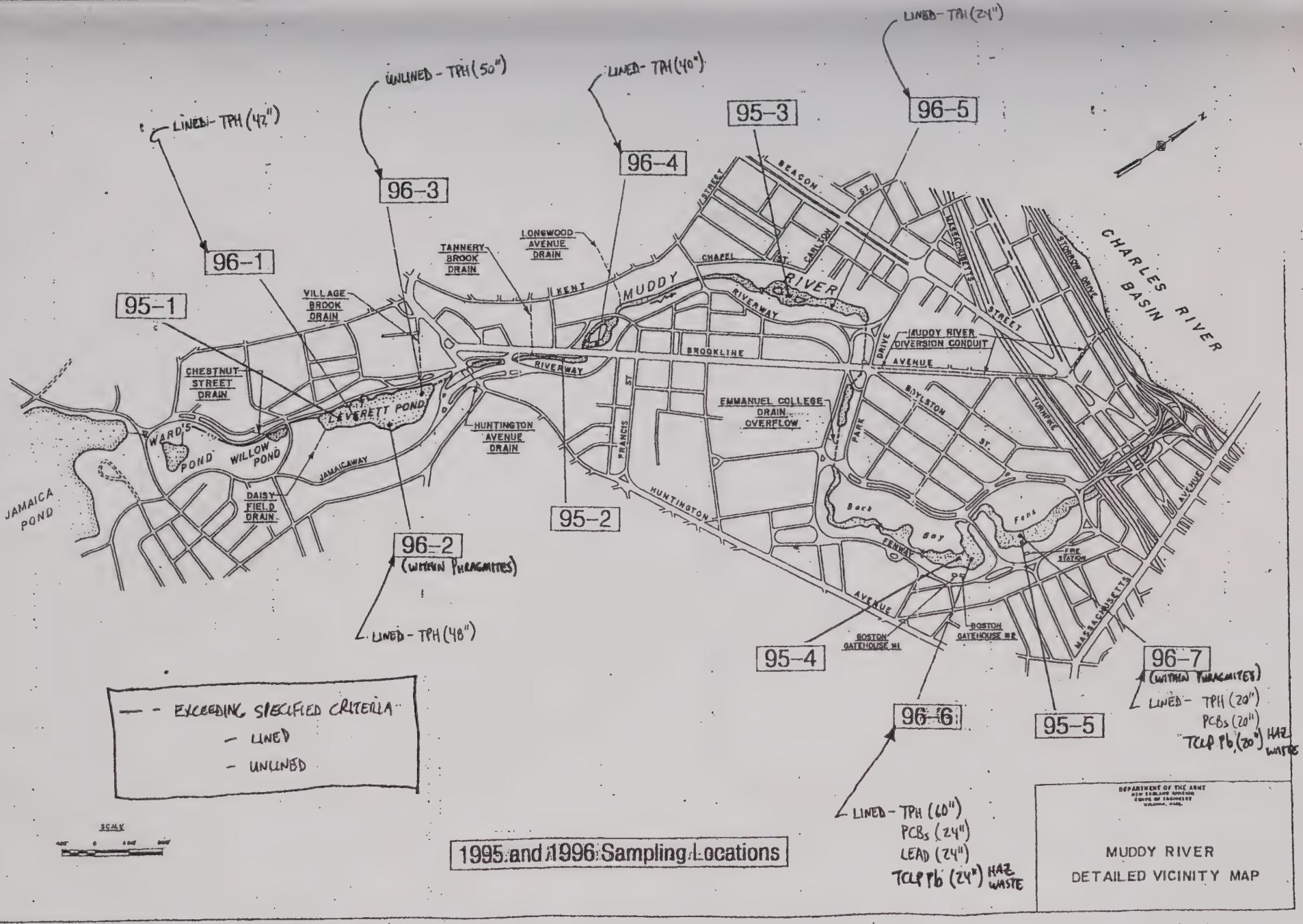

LINED - TPH (42")
UNLINED - TPH (50")
LINED - TPH (40")
LINED - TPH (24")
95-1
96-1
96-3
96-4
95-3
96-5
VILLAGE BROOK DRAIN
TANNERY BROOK DRAIN
LONGWOOD AVENUE DRAIN
CHESTNUT STREET DRAIN
WARD'S POND
WILLOW POND
LEVERETT POND
JAMAICA POND
DAISY FIELD DRAIN
JAMAICAWAY
HUNTINGTON AVENUE DRAIN
KENT
MUDDY RIVER
RIVERWAY
CHAPEL
BROOKLINE
FRANCIS ST
HUNTINGTON
EMMANUEL COLLEGE DRAIN OVERFLOW
BEACON ST
CARLTON ST
MASSACHUSETTS STREET
MUDDY RIVER DIVERSION CONDUIT
AVENUE
BOYLSTON ST
PARK DRIVE
STORROW DRIVE
CHARLES RIVER BASIN
TURNPIKE
Back Bay Fens
FENWAY
FIRE STATION
BOSTON GATEHOUSE #1
BOSTON GATEHOUSE #2
95-2
96-2 (WITHIN THREAGMITES)
LINED - TPH (48")
95-4
96-6
LINED - TPH (60")
PCBs (24")
LEAD (24")
TCLP Pb (24") HAZ WASTE
95-5
96-7 (WITHIN THREAGMITES)
LINED - TPH (20")
PCBs (20")
TCLP Pb (20") HAZ WASTE
EXCEEDING SPECIFIED CRITERIA
- LINED
- UNLINED
SCALE
1995 and 1996 Sampling Locations
MUDDY RIVER
DETAILED VICINITY MAP

Plate C-2

Attachment II

Landfill Disposal Criteria

TABLE 1

CONTAMINANT LEVELS FOR SOIL REUSE AT LANDFILLS

CONTAMINANT	Reuse Levels (mg/kg)[a]	
	Lined Landfills	Unlined Landfill
Total Arsenic	40	40
Total Cadmium	80	30
Total Chromium	1,000	1,000
Total Lead	2,000	1,000
Total Mercury	10	10
Total Petroleum Hydrocarbons (TPH)	5,000	2,500
Total PCBs[b]	< 2	< 2
Total SVOCs[c]	100	100
Total VOCs[d]	10	4
Conductivity[e] (umhos/cm)	8,000 umhos/cm	4,000 umhos/cm
Listed or Characteristic Hazardous Waste (TCLP)[f]	NONE	NONE

TABLE 1 NOTES:

a The reuse levels are expressed as total levels in mg/kg and apply to reuse of soil as daily cover, intermediate cover, and pre-capping contour material at lined landfills and unlined landfills as described in this Policy.

b Total concentrations of polychlorinated biphenyls EPA Method 8080.

c Total concentrations of compounds listed in EPA Method 8270.

d Total concentration of compounds listed in EPA Method 8260.

e For soil which may be expected to contain elevated NaCl.

f TCLP testing shall be performed for metals or organic compounds when the total concentrations in the soil are above the theoretical levels at which the TCLP criteria may be exceeded. For guidance parties shall consult United States Environmental Protection Agency, Memorandum #36, "Notes on RCRA Methods and QA Activities", pp. 19-21, Gail Hanson, January 12, 1993.

[Please note that the methods specified in footnotes d, e, and f indicate the universe of chemicals to be added up in calculating the total concentrations for these classes of contaminants. Section 5.0 of this Policy provides guidance for determining which specific chemicals must be considered chemicals of concern (e.g., contaminants) within the soil. This Policy does not specify the analytical test methods to be used to quantify the specific contaminants. Readers can consult 310 CMR 40.0017 Environmental Sample Collection and Analysis, 310 CMR 30.110 Criteria. Procedures for Determining Which Wastes are to be Regulated as Hazardous Waste or Non-Hazardous Waste and 310 CMR 30.151 Representative Sampling Methods for additional information which may be applicable to the selection of appropriate sampling and analytical methods.]

Oil Contaminated Soils Evaluation Form

TCLP Parameter	Reg. Limit mg/l	
METALS		
Arsenic	5	
Barium	100	
Cadmium	1	
Chromium	5	
Lead	5	
Mercury	0.2	
Selenium	1	
Silver	5	
VOLATILES		
Benzene	0.5	
Carbon Tetrachloride	0.5	
Chlorobenzene	100	
Chloroform	6	
1,2-Dichloroethane	0.5	
1,1-Dichloroethene	0.7	
Methyl Ethyl Ketone	200	
Tetrachloroethene	0.7	
Trichloroethene	0.5	
Vinyl Chloride	0.2	
SEMI-VOLATILES		
* m-Cresol	200	
o-Cresol	200	
p-Cresol	200	
1,4-Dichlorobenzene	7.5	
2,4-Dinitrotoluene	0.13	
Hexachlorobenzene	0.13	
Hexachlorobutadiene	0.5	
Hexachloroethane	3	
Nitrobenzene	2	
Pentachlorophenol	100	
Pyridine	5	
2,4,5-Trichlorophenol	400	
2,4,6-Trichlorophenol	2	
PESTICIDES		
Chlordane	0.03	
Endrin	0.02	
Heptachlor	0.008	
Heptachlor Epoxide	0.008	
Lindane	0.04	
Methoxychlor	10	
Toxaphene	.5	
HERBICIDES		
2,4-D	10	
2,4,5-TP	1	

	Reg. Limit	Detection
TOTAL VOLATILES		
Tetrachloroethene	None Detected	
Trichloroethene		
Chlorobenzene		
Trichlorofluoromethane		
1,1,2-Trichloroethane		
1,1,2-Trichloro-1,2,2-Trifluoromethane		
Carbon Tetrachloride		
Methylene Chloride		
1,1,1-Trichloroethane		
Ortho-Dichlorobenzene		
OR		
ORGANIC HALOGENS		
TOX	1000ppm	
PCB's	50 ppm	
pH	2<pH<12.5	
Flashpoint	>140 Degrees F	
REACTIVITY		
Sulfide	500 ppm	
Cyanide	250 ppm	

Sample Hold Times:

QA/AC:

Test Methods:

Laboratory:

* All Testing Must be Performed Using SW-846 Test Methods

AGGREGATE INDUSTRIES ENVIRONMENTAL SERVICES

1101 Turnpike Street, Stoughton, MA 02072
Phone (781) 341-5500 Fax (781) 341-2440

STOUGHTON RECYCLING FACILITY

1101 Turnpike Street, Stoughton, MA 02072
Class A Recycling Permit #S-96-003 EPA ID MAD981213531

SOIL RECYCLING TESTING REQUIREMENTS

TEST REQUIRED	TEST FREQUENCY	GAS CONTAMINATED	OIL CONTAMINATED
TPH	100 cubic yards	-------	50,000 ppm
VOLATILE ORGANICS EPA 8260 (or equivalent)	100 cubic yards (gas cont. soil)	500 ppm total VOC's 5 ppm total chlor. solvents	-------
	500 cubic yards (oil cont. soil)	---------	500 ppm total VOC's 5 ppm total chlor. solvents
FLASHPOINT	500 cubic yards	140 F min.	140 F min.
PH	500 cubic yards	Between 2 and 12.5	Between 2 and 12.5
REACTIVITY Sulfide & Cyanide	500 cubic yards	Non-reactive	Non-reactive
PCB's	500 cubic yards	Less than 1 ppm	Less then 1 ppm
METALS: Total*	500 cubic yards	TOTAL (ppm)	TOTAL (ppm)
Arsenic		30	30
Cadmium		30	30
Chromium		500	500
Mercury		10	10
Lead		1,000	1,000

* If Total Metal levels indicate that mathematically, TCLP levels can be exceeded, a TCLP analysis is required.

GC/FID is required if source of contamination is not known.

Total Organic Carbon (TOC) test is required if there is reason to believe TOC is greater than 10%.

No soil shall be accepted for recycling if any hazardous contaminant is present or if any free liquids are present.

BTES/1100.STO 4/1/00

LOGANO
A WASTE MANAGEMENT COMPANY

P.O. Box 144
Portland, CT 06480
(860) 342-0667
(860) 342-4866 Fax

QUOTATION

April 28, 2000

Kevin Dillaway
CDM
1 Cambridge Place
50 Hampshire St.
Boston, MA 02139

Scope of Work:

Logano Waste Management to provide 45 cubic yard dump trailer(s) for the live loading of approximately 170,000 Cubic Yards of soil from your site in Boston, Massachusetts. Transport waste to a fully permitted Unlined Landfill for use as daily cover.

Cost:

Transportation & Disposal:	$ 28.00 / Ton
Site / Facility Demurrage:	$ 85.00 / Hour 2 Hours Site, 2 Hours Facility @ N/C

***30 Ton Minimum Per Load ***
Pricing subject to Temporary Fuel Surcharge
Pricing Not Predicated on Prevailing Wage Rate
Pricing subject to Local, State and Federal taxes and/or fees where applicable.

Payment Terms:	Net 30 Days
Net Weight:	60,000 Lbs.
Analytical:	Mass Table 1
Pre-Shipment Requirements:	L.S.P. Letter
Approval Time Frame:	1 Week
Pricing Expires:	June 30, 2000

General Conditions apply to the above quotation.

Billy Torello
Hazardous Waste Division Manager

Please sign below to designate approval, and fax to (860) 342-4819.

Signature _____ Date _____

LOGANO
A WASTE MANAGEMENT COMPANY

P.O. Box 144
Portland, CT 06480
(860) 342-0667
(860) 342-4866 Fax

QUOTATION

April 20, 2000

Attn: Kevin
C.D.M.
1 Cambridge Place
500 Hampshire St.
Cambridge, MA 02139

Scope of Work:

Logano Waste Management to provide 45 cubic yard dump trailer(s) for the live loading of approximately 170,000 Cubic Yards of Non Hazardous Soil from your site in Boston, Massachusetts. Transport waste to a fully permitted Subtitle "D" Landfill for use as "daily cover."

Cost:

Transportation & Disposal:	$ 58.50 / Ton – Fitchburg Landfill $ 59.50 / Ton – Barre Landfill
Site / Facility Demurrage:	$ 85.00 / Hour 2 Hours Site, 2 Hours Facility @ N/C

*** 30 Ton Minimum Per Load ***
Pricing subject to Temporary Fuel Surcharge
Pricing Not Predicated on Prevailing Wage Rate
Pricing subject to Local, State and Federal taxes and/or fees where applicable.

Payment Terms:	Net 30 days
Net Weight:	48,000 Lbs.
Analytical:	Mass Table 1
Pre-Shipment Requirements:	LSP Letter, BOL
Approval Time Frame:	1 Week
Pricing Expires:	May 31, 2000

General Conditions apply to the above quotation.

Beth Roccapriore
Beth Roccapriore
Project Development

Please sign below to designate approval, and fax to (860) 342-4819.

Signature _____ Date _____

LOGANO
A WASTE MANAGEMENT COMPANY

P.O. Box 144
Portland, CT 06480
(860) 342-0667
(860) 342-4866 Fax

QUOTATION

April 20, 2000

Attn: Kevin
C.D.M.
1 Cambridge Place
500 Hampshire St.
Cambridge, MA 02139

Scope of Work:

Logano Waste Management to provide 45 cubic yard dump trailer(s) for the live loading of approximately 170,000 Cubic Yards of Hazardous TSCA PCB Soil from your site in Boston, Massachusetts. Transport waste to a fully permitted Treatment, Storage & Disposal Facility (TSDF).

Cost:

Transportation & Disposal:	$ 233.00 / Ton
6– Mil Poly Liner:	Included
Site / Facility Demurrage:	$ 85.00 / Hour 2 Hours Site, 2 Hours Facility @ N/C
NY & MA Haz Tax:	Included

*** 22 Ton Minimum Per Load ***
Pricing subject to Temporary Fuel Surcharge
Pricing Not Predicated on Prevailing Wage Rate
Pricing subject to Local, State and Federal taxes and/or fees where applicable.

Payment Terms:	Net 30 days
Net Weight:	48,000 Lbs.
Pre-Shipment Requirements:	Signed Waste Profile
Approval Time Frame:	1 Week
Pricing Expires:	May 31, 2000

General Conditions apply to the above quotation.

Beth Roccapriore
Beth Roccapriore
Project Development

Please sign below to designate approval, and fax to (860) 342-4819.

Signature _____ Date _____

LOGANO
A WASTE MANAGEMENT COMPANY

P.O. Box 144
Portland, CT 06480
(860) 342-0667
(860) 342-4866 Fax

QUOTATION

April 20, 2000

Attn: Kevin
C.D.M.
1 Cambridge Place
500 Hampshire St.
Cambridge, MA 02139

Scope of Work:

Logano Waste Management to provide 45 cubic yard dump trailer(s) for the live loading of approximately 170,000 Cubic Yards of Hazardous Lead Soil with Non TSCA PCB'S from your site in Boston, Massachusetts. Transport waste to a fully permitted Treatment, Storage & Disposal Facility (TSDF).

Cost:

Transportation & Disposal:	$ 199.40 / Ton
6 – Mil Poly Liner:	Included
Site / Facility Demurrage:	$ 85.00 / Hour 2 Hours Site, 2 Hours Facility @ N/C
NY & MA Haz Tax:	Included

*** 22 Ton Minimum Per Load ***
Material Must Be <3" X <3" X <3 "
Pricing subject to Temporary Fuel Surcharge
Pricing Not Predicated on Prevailing Wage Rate
Pricing subject to Local, State and Federal taxes and/or fees where applicable.

Payment Terms:	Net 30 days
Net Weight:	48,000 Lbs.
Pre-Shipment Requirements:	Signed Waste Profile and Sample
Approval Time Frame:	1 Week
Pricing Expires:	May 31, 2000

General Conditions apply to the above quotation.

Beth Roccapriore
Beth Roccapriore
Project Development

Please sign below to designate approval, and fax to (860) 342-4819.

Signature _____ Date _____

CROSSROADS PRICE COMMUNICATION FORM

Today's Date: 4/28/00
Project Start Date: _____
Need Price By: _____

****

SECTION I

Request for: Non-Bid Bid

Type of Business: Base ☐ Event ☐

Quote Requested By: Kevin Dillaway

Company: Camp Dresser McKee

Telephone: 617-452 6330

Fax: 617 452-8330

Generator Name

Address *City* *State* *Zip*

****

SECTION II

Waste Description and Codes (if applicable): Dredge Material

Process Generating Waste: Dredging

Quantity: ±170,000 Tons ☐ Cubic Yards ☒ other: _____

Price Requested For: Disposal only ☐ Trans only ☐ T&D ☒ other: _____

Transportation Required: None ☐ Dumptrailers ☒ Roll-offs ☐ other: _____

Other Brokers Bidding: _____

Competitor Information: _____

****

SECTION III

Disposal Facility: Waste Management Disposal Services of Maine- Crossroads Landfill, Norridgewock ME

Disposal Price: $ ±70.00 per ton Maine State Tax: $ 5.00 per ton

Transportation Price: $ included per _____ Transportation Method: Dumps ☐ Roll-offs ☐

Additional Charges/Conditions/Comments: Testing required TCLP Metals - TCLP Volitals - TCLP Semi-Volitales - Total P.C.B.'s - One per every 500 ton unless notified

By: Bryan A. Gordon Date: 4/29/00
WMI Representative

All pricing is contingent upon approval to accept subject waste materials for disposal. Waste priced as approved, invoiced as received. This quotation is good for 30 days. When the generator is unknown to us, we reserve the right and have a legal obligation to void tis proposal should we be currently involved in discussions, negotiations, or under contract directly with the generator for the disposal of this waste

FACT SHEET

SITE:

Glenview Sand and Gravel
Stedman Street
Chelmsford, MA 01824

OPERATOR:

Patrick Hannon
Amalgamated Transportation Inc.
100 Strurtevant Street
Somerville, MA 02145

(617) 782-7777
(617) 666-4053 FAX

ADMINISTRATIVE CONSENT ORDER:

ACO-NE-97-4002

Effective date: August 14, 1997

ENGINEER OF RECORD:

Camp Dresser & Mckee Inc.
10 Cambridge Center
Cambridge, MA 02142
Daniel Duffy, Project Engineer

Proposal:

An unpermitted solid waste landfill has been identified to exist on the Glenview Sand and Gravel Property ("Glenview"), adjacent to the City of Lowell, Westford Street Landfill. The bulk of the MSW waste on the Glenview site was relocated to the Westford Street Landfill as part of the closure of that landfill. Some waste materials have been identified as remaining on the Glenview property. MASS Gravel, Inc. (MGI) proposes to remediate the conditions on the Glenview property in two (2) phases. The first phase will effect interim grading in the area from which waste was removed as part of the Westford Street Landfill Closure. The second phase will continue fill the property and construct permanent storm water control facilities.

The first phase will bring approximately 75,000 cu.yds. of soil to the site. The project will fill an area of approximately 4 acres - from which MSW waste material was previously removed - to an elevation of approximately 150 ft. Mean Sea Level (msl).

In the second phase MGI proposes to continue filling on approximately 14 acres of the site to an elevation of 165 ft. msl. Phase 2 will require approximately 675,000 cu.yds. of fill.

This approval is ONLY for the purpose of interim grading for Phase 1, of the proposed project.

Soils from projects other than the CA/T project and used for fill at the Site shall not exceed the following standards:

CONTAMINANT LEVELS FOR SOIL REUSE AT UNLINED LANDFILLS

CONTAMINANT	Reuse Levels (mg/kg)
Total Arsenic	40
Total Cadmium	30
Total Chromium	1000
Total Lead	1000
Total Mercury	10
Total PCB	Less than 2
Total SVOCs	100
Total TPH	2500
Total VOCs	4
Conductivity	4000 (umhos/cm)
TCLP	Pass
Other Contaminants	MCP method 1, S-1 Soil & GW-1

Sampling and analysis of soils originating from projects other than the CA/T, to ensure they meet the above limits, shall be accomplished in accordance with the procedures contained in DEP's "Contaminated Soil Policy" (BWP #94-037) or any successor policy.

p:\emacdona\chlmapp

CDM Telephone Call Report

CDM Camp Dresser & McKee Inc.

One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139
Phone: 617-452-6000
Fax: 617-452-8000

Project:	Muddy River	**Client:**	Boston Parks Department
Job No.	1517-28449-EIR.ENVIMP.PREFILING	**Date:**	10-04-01

☐ **Phone in** ☐ **Phone out** ☐ **Current Project** ☐ **Prospective Project/Marketing** ☐ **Administrative** ☐ **Other**

Made by/Received by: Made by Erika Lund (CDM)

Talked with: William Reinhardt (Aggregate Industries, 781-341-5500)

Subject: Muddy River Dredge Material Disposal

Distribution: B. Conklin, D. Christian, C. Kaslick

- **Discussion:**

I spoke with Bill regarding Aggregate's requirements for accepting dredged material at their facility. He informed me that the material has to be dewatered before being sent to the facility. However, it is LSP opinion whether the in-situ analytical sample data is representative of the dewatered samples. Aggregate will not accept more than 500 tons/day of dredge material.

- **Action Required (what, who, when):**

Bill was going to send a fax which had pricing information and the frequency of sampling requirements.

CDM Telephone Call Report

CDM Camp Dresser & McKee Inc.

One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139
Phone: 617-452-6000
Fax: 617-452-8000

Project:	Muddy River	**Client:**	Boston Parks Department
Job No.	1517-28449-EIR.ENVIMP.PREFILING	**Date:**	10/04/01

☐ **Phone in** ☐ **Phone out** ☐ **Current Project** ☐ **Prospective Project/Marketing** ☐ **Administrative** ☐ **Other**

Made by/Received by:	Made by Erika Lund (CDM)
Talked with:	Beth Rocapriore (Waste Management, 860-342-5053 x117)
Subject:	Muddy River Dredge Material Disposal
Distribution:	B. Conklin, D. Christian, C. Kaslick

- **Discussion:**

I spoke with Beth regarding Waste Management's requirements for accepting dredged material at their facility. She informed me that the material has to be dewatered before being sent to the facility. Also, Waste Management requires the analytical sample results from dewatered samples. However, it is the LSP opinion of the frequency of sampling.

- **Action Required (what, who, when):**

Beth is going to send me pricing information via fax.

CDM Telephone Call Report

CDM Camp Dresser & McKee Inc.

One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139
Phone: 617-452-6000
Fax: 617-452-8000

Project:	Muddy River	**Client:**	Boston Parks Department
Job No.	1517-28449-EIR.ENVIMP.PREFILING	**Date:**	11/21/01

☐ **Phone in** ☐ **Phone out** ☐ **Current Project** ☐ **Prospective Project/Marketing** ☐ **Administrative** ☐ **Other**

Made by/Received by: Made by Erika Lund (CDM)

Talked with: Eugene Lunney (Special Waste Specialist, BFI 781-289-0500 x225)

Subject: Muddy River Dredge Material Disposal

Distribution: B. Conklin, D. Christian, C. Kaslick

- **Discussion:**

I spoke with Eugene regarding BFI's requirements for accepting dredged material at their facility. He informed me that the facility will only accept dewatered samples that have no free liquid. The samples must be analyzed as outlined in the Soil Policy Requirements for Reuse. The analytical sample results can be from in-situ material, if the chemical characterization is not changed by dewatering. An LSP opinion would be required that the in-situ data is representative of the dewatered samples. The sampling frequency of one sample every 500/cy is acceptable. However, the facility cannot accept more than 500 tons/day of material.

The cost of this is $25/ton at the gate at Fall River facility.

- **Action Required (what, who, when):**

CDM Telephone Call Report

CDM Camp Dresser & McKee Inc.

One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139
Phone: 617-452-6000
Fax: 617-452-8000

Project:	Muddy River	**Client:**	Boston Parks Department
Job No.	1517-28449-EIR.ENVIMP.PREFILING	**Date:**	11/21/01

☐ **Phone in** ☐ **Phone out** ☐ **Current Project** ☐ **Prospective Project/Marketing** ☐ **Administrative** ☐ **Other**

Made by/Received by:	Made by Erika Lund (CDM)
Talked with:	Mike (Environmental Soil Management Inc, Loudon NH 603-783-0228)
Subject:	Muddy River Dredge Material Disposal
Distribution:	B. Conklin, D. Christian, C. Kaslick

- **Discussion:**

I spoke with Mike regarding ESMI's requirements for accepting dredged material at their facility. He informed me that the facility will only accept dewatered material (less than 15% moisture). The analysis required is TPH method 8100, VOC, SVOC, RCRA 8 total metals and PCBs. They prefer analytical sample data from the stockpiled material, however, if it is LSP opinion that the in-situ data is representative of the stockpile material, they will accept the in-situ sample analytical data. The sampling frequency is every 200/ton. The facility can only accept 200/tons per day of material, possibly more depending on the soil matrix.

- **Action Required (what, who, when):**

For specific cost information, he needs to see some data that we collected. We can fax this to him at 603-783-0104.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

May 26, 2000

Bruce Conklin
Camp, Dresser & McKee, Inc.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Re: Muddy River Restoration Project, Sediment Quality Testing Plan

Dear Mr. Conklin:

The Department of Environmental Protection (DEP) acknowledges receipt of your May 11, 2000 correspondence which forwarded to DEP for review and approval copies of the May 2000 Sediment Quality Testing Plan for the Muddy River Restoration Project. On May 15th I contacted you and indicated that I had reviewed the Plan and it appeared to be comprehensive and that I only had a few relatively minor comments but I needed to check with other DEP staff that had been requested to also review the document. It was agreed that I would attempt to provide you with formal comments the following week. This correspondence includes DEP's consolidated comments on the Sediment Quality Testing Plan.

Overall, the Plan is acceptable and DEP herewith authorizes CDM to proceed with the program subject to the following:

(1) Page 1-2 states that 5 sediment samples were recently collected from Wards and Willow Pond and that the results are anticipated to be available at the end of May. Please forward to DEP copies of the results as soon as they are available.

(2) Page 1-2 indicates that, along with other management options, In-State Unlined Landfills will be assessed for reuse/disposal of the Muddy River sediments. Please be advised that based upon DEP's knowledge of the characteristics and contaminant concentrations of the Muddy River sediments and the lack of available/permittable unlined landfills, this sediment management option is very

unlikely to be viable and DEP suggests that CDM not expend a significant amount of time and resources assessing this option.

(3) Page 2-2 and 2-3 list the parameters and testing methods that will be used. The list should be amended by indicating that TCLP testing would also be performed for any organic contaminant that exceeds the theoretical TCLP threshold.

(4) It is DEP's understanding that by performing this sampling plan the proponent is expecting to be able to develop adequate information to allow for in-situ pre-dredging characterization and classification of the sediment. Please be aware, that by approving this Plan DEP is not guaranteeing that all of the sediment can be fully classified in this manner. In addition, depending on the reuse/disposal option DEP may require that a verification sampling program be performed (see Bruce Haskell of your office for a description of the verification program being utilized at the Rubchinuk Landfill).

(5) It is likely that much, if not all, of the dredged sediment will be required to be treated with lime, or another similar material, to control odors, particularly hydrogen sulfide, during excavation, transportation and reuse/disposal. Use of lime may also be beneficial by increasing the solids content of the sediment. This should be considered as the sediment sampling program is implemented.

(6) Please keep in mind that the unlined and lined landfill criteria delineated in Table 1 of Interim Policy #COMM-97-001 (and referred to on page 1-2 of the report) are criteria that would allow contaminated soils/sediment to be *reused* at permitting/approved unlined and lined landfills without specific DEP review and approval. Higher levels of contamination could potentially be allowed based upon a specific DEP review and approval procedure as described in the referenced Policy. The Policy also requires that disposal at either lined or unlined Landfills receive a specific DEP approval.

Feel free to contact me at (617) 292-5698 if you have any questions or comments regarding this correspondence.

Very truly yours,

Steven G. Lipman, P.E.
Special Projects Coordinator

SGL/wp
Conklin2

CC: Carl Noyes, Cortell and Assoc.
Rachel Freed, DEP/WW
Judy Perry, DEP/WW
John Carrigan, DEP/BWP

CDM Camp Dresser & McKee Inc.

consulting
engineering
construction
operations

One Cambridge Place
50 Hampshire Street
Cambridge, Massachusetts 02139
Tel: 617 452-6000 Fax: 617 452-8000

July 18, 2000

Mr. Steven Lipman, P.E.
Special Projects Coordinator
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Subject: Muddy River Restoration Project
Sediment Quality Testing Plan

Dear Mr. Lipman:

This letter has been prepared to provide the results of sediment samples collected in Ward's and Willow Pond, and based on these results to request that certain parameters are analyzed less frequently than proposed in the Sediment Quality Testing Plan prepared by Camp Dresser & McKee Inc. (CDM). On April 24, 2000, the U.S. Army Corps of Engineers (ACOE) collected sediment samples at three locations from Ward's Pond and at two locations from Willows Pond. Samples were collected from two depth intervals at each location. The results of these analyses are summarized in the attached table. A figure that shows the sample locations is also provided.

The samples collected were analyzed for metals, including the Toxicity Characteristic Leaching Procedure (TCLP) analysis for lead, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and pesticides. The results of samples collected from Ward's Pond are generally lower compared to the other areas within the Muddy River system. Based on the number of samples collected and the results of the analyses, CDM proposes to reduce the number of proposed samples from thirty-six to thirty samples and to analyze half of the samples for the full parameter suite as listed in Table 1. The other samples will be analyzed for extractable and volatile petroleum hydrocarbons, metals and TCLP if required. Since additional samples were also collected at Willow Pond, the sampling frequency and parameters for analysis has been reduced as listed in Table 1. The sampling frequency for each of the areas will remain the same as originally proposed.

As provided in your comments on the Sediment Quality Testing Plan (letter to CDM dated May 26, 2000), CDM has included TCLP testing for any organic contaminant that exceeds the theoretical TCLP threshold.

If you have any questions on this matter, please do not hesitate to contact me.

Very truly yours,

CAMP DRESSER & McKEE INC.

Bruce R. Conklin

Bruce R. Conklin, P.E.
Vice President

Attachments

cc: C. Kaslick

Table 1
Sampling Frequency and Proposed Parameters for Analysis

Muddy River Restoration Project

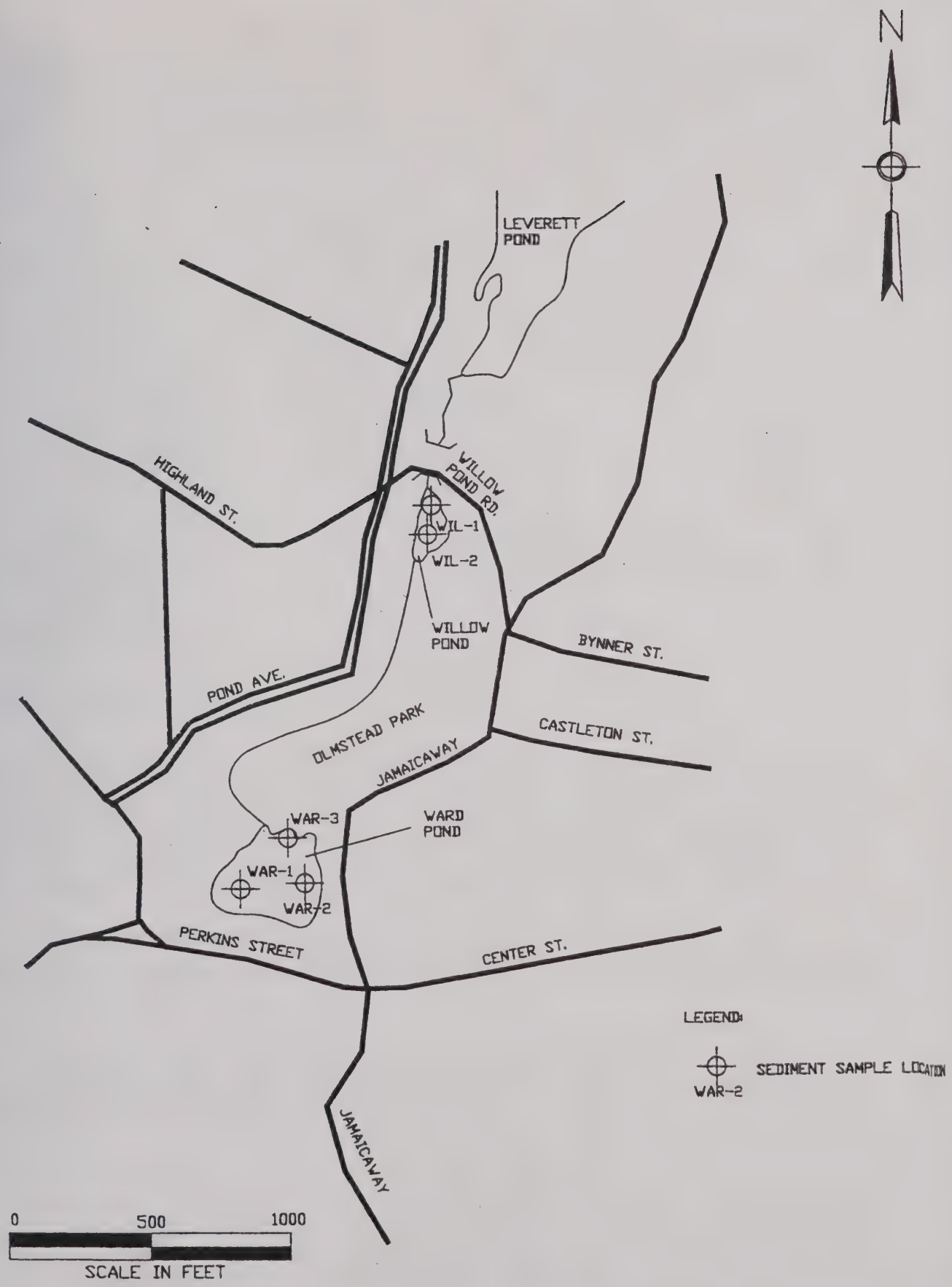
Area of Study	Proposed Excavation Volume	Existing Samples	Proposed Samples	Sampling Frequency (samples/yd^3)	Analyses
Wards Pond	19,340 yd^3	9	15 (odd-numbered)	496	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			15 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Willow Pond	9,670 yd^3	6	7 (odd-numbered)	484	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			7 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Leverett Pond	21,788 yd^3	8	39 (odd-numbered)	253	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			39 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Riverway	30,000 yd^3	9	60 (odd-numbered)	238	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			57 (even-numbered)		VPH, EPH, RCRA 8 metals, TCLP
Back Bay Fens Area (includes Charlesgate Area)	91,102 yd^3	12	198	434	VPH, EPH, RCRA 8 metals, PCBs, pesticides, TCLP, Reactivity, Conductance, and Sieve & Hydrometer
			20 composite samples		paint filter liquid test

NOTE:

TCLP testing will be conducted on samples where any organic or inorganic contaminant exceeds the theoretical TCLP threshold.

Muddy River 2000 Sediment Testing

ANALYTE	SAMPLE LOCATION									
	Willow 00-1 (0 - 0.5')	Willow 00-1 (0.5-3.54')	Willow 00-2 (0 - 0.5')	Willow 00-2 (0.5 - 4.55')	Wards 00-1 (0 - 0.5')	Wards 00-1 (0.5 - 2.3')	Wards 00-2 (0 - 0.6')	Wards 00-2 (0.6 - 2.0')	Wards 00-3 (0 - 0.6')	Wards 00-3 (0.6 - 2.58')
INORGANICS (mg/kg)										
Arsenic	16.1	24.5	13.5	25.8	30.3	13.7	30.1	20.5	15.7	28.5
Cadmium	3.18	2.29	1.55	2.43	1.15	0.3	1.35	0.29	2.31	0.74
Chromium	86.6	60.0	60.2	69.8	34.1	26.0	37.5	24.0	31.6	33.9
Copper	236	158	126	178	62.3	28	74.6	42.5	66.5	56.1
Lead	573	602	522	606	307	63	491	198	529	278
Nickel	40.4	34.9	26.8	36.0	23.3	14.7	26.3	13.0	32.7	19.4
Mercury	0.78	0.66	0.43	1.18	0.54	0.19	0.86	0.44	0.5	0.58
Zinc	483	359	304	426	225	63	395	133	310	299
TCLP Lead (mg/l)	0.1	1.1	0.1	0.5	0.1	n.d.	0.3	n.d.	0.2	0.1
PAHs (ug/kg)										
Acenaphthene	894	1232	596	3608	43	n.d.	210	16	47	80
Acenaphthylene	353	597	170	1685	177	n.d.	1103	477	121	294
Anthracene	1836	3567	1315	9660	343	56	2433	1406	221	527
Benzo(a)anthracene	4825	8294	3731	23519	1358	144	5576	3109	714	1556
Benzo(a) pyrene	5395	8225	4053	23353	1653	168	6630	3118	882	1978
Benzo (b)fluroanthene	6129	7679	4436	22362	1753	177	6299	2803	1009	2162
Benzo(k)fluroanthene	5454	7511	3816	20529	1579	178	6345	2799	935	2203
Benzo (g,h,i)perylene	4601	5871	3179	16325	1406	152	5203	2154	843	1826
Chrysene	7117	10151	5030	28425	1798	203	7847	4204	1050	2480
Dibenz(a,h)anthracene	985	1365	752	3260	320	29	1194	478	184	429
Fluoranthene	13129	20652	9764	62154	2610	365	11909	7092	1595	3199
Fluorene	1559	1900	841	5395	89	n.d.	553	345	86	127
Indeno(1,2,3-cd)pyrene	4822	6407	3366	18247	1462	143	5550	2283	857	1956
2-methylnapthalene	3417	1075	962	2878	74	n.d.	181	75	48	53
Napthalene	364	492	293	1068	92	n.d.	297	10	74	103
Perylene	1433	2166	1063	5235	472	4077	1539	1687	285	591
Phenanthrene	9360	14235	6802	44766	886	111	3873	2869	689	1113
Pyrene	11652	18971	8482	56922	2715	363	12278	7256	1500	3230
Total PAHs (ug/kg)	83325	120390	58651	349391	18830	6166	79020	42181	11140	23907
TPH (mg/kg)	49590	53260	57010	33880	2868	3359	4626	4049	2410	2902
PCBs (ug/kg)	210	342	71	287	23	2	47	n.d.	40	7
PESTICIDES (ug/kg)										
DDD	577	831	286	816	18	n.d.	22	6	27	6
DDE	269	88	124	122	26	n.d.	38	n.d.	63	4.8
DDT	44	88	260	128	n.d.	n.d.	n.d.	n.d	2	n.d.
Gamma Chlordane	56	27	26	22	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Apha Chlordane	53	30	28	33	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Endosulfan I	17	25	12	24	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Methoxychlor	56	27	38	32	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Heptachlor	5	n.d	4	n.d.	n.d.	n.d.	n.d.	n.d	n.d	n.d.
TOC (%)	15.1	10.3	13.3	11.2	7.8	21.6	8.7	20.2	10.7	6.4
Silt & Clay (%)	93	83	90	93	86	85	99	99	78	82



Harding Lawson Associates
Engineering and Environmental Services
107 Auburn Road
Building II, #301
Wakefield, MA 01880
781-245-6606

SEDIMENT SAMPLE LOCATIONS
WARD POND AND WILLOW POND
OLMSTEAD PARK
BROOKLINE, MA

FIGURE 1

DRAWN FILE DATE REVISED NO.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

July 26, 2000

Bruce Conklin
Camp, Dresser & McKee, Inc.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Re: Muddy River Restoration Project, Sediment Quality Testing Plan (Revision)

Dear Mr. Conklin:

The Department of Environmental Protection (DEP) acknowledges receipt of your July 18,2000 correspondence which forwarded to DEP the results of sediment sampling from Ward's and Willow Ponds and a request to revise the original sediment and sampling plan as it relates to Ward's and Willow Ponds. In addition, your correspondence states that, in accordance with DEP's May 16, 2000 sediment sampling plan approval, the plan has been revised to include TCLP testing for any organic contaminant that exceeds the theoretical TCLP threshold.

Based on DEP's review of the Ward's and Willow Pond sampling results and the proposed TCLP testing procedure, DEP herewith approves the revised sampling plan delineated in the attached Table 1.

Feel free to contact me at (617) 292-5698 if you have any questions or comments regarding this correspondence.

Very truly yours,

Steven G. Lipman, P.E.
Special Projects Coordinator

Table 1
Sampling Frequency and Proposed Parameters for Analysis

Muddy River Restoration Project

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Muddy River 2000 Sediment Testing

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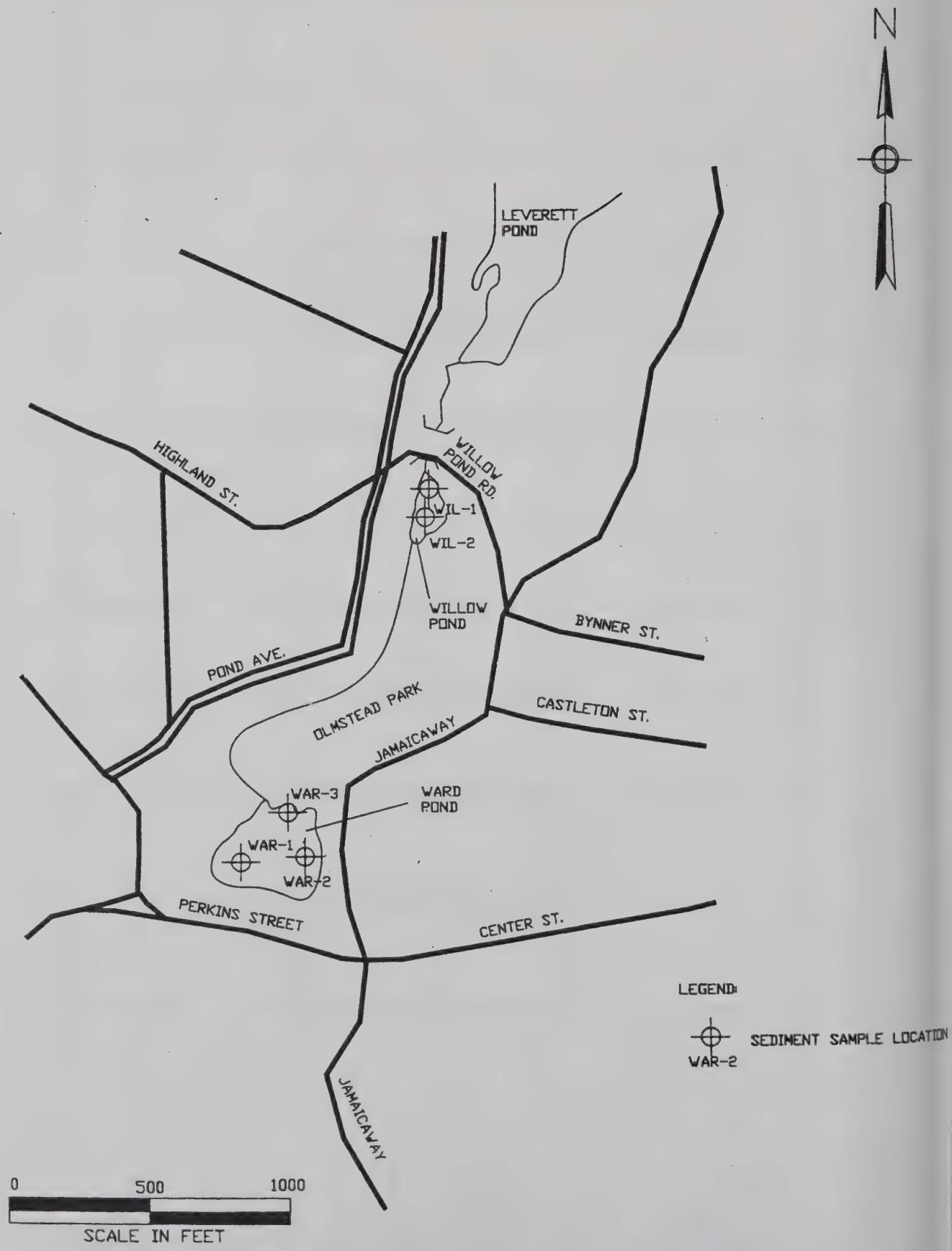
DDT	44	88	260	128	n.d.	n.d.	n.d.	n.d	2	n.d.
Gamma Chlordane	56	27	26	22	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Apha Chlordane	53	30	28	33	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Endosulfan I	17	25	12	24	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Methoxychlor	56	27	38	32	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Heptachlor	5	n.d	4	n.d.	n.d.	n.d.	n.d.	n.d	n.d	n.d.
TOC (%)	15.1	10.3	13.3	11.2	7.8	21.6	8.7	20.2	10.7	6.4
Silt & Clay (%)	93	83	90	93	86	85	99	99	78	82



Harding Lawson Associates
Engineering and Environmental Services
107 Aububon Road
Building II, #301
Wakefield, MA 01880
781-245-6606

SEDIMENT SAMPLE LOCATIONS
WARD POND AND WILLOW POND
OLMSTEAD PARK
BROOKLINE, MA

FIGURE 1

REVISED

DRAWN

FILE

DATE

ATTACHMENT F-2

SEDIMENT BORING LOGS

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
CG-SED-1

Client: Boston Parks and Recreation Department
Project Location: Charles Gate
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 7/25/00 **End:** 7/25/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/6	0	0.0	3 3 3 2			0-2': Wet, loose, brown, coarse to fine SAND, some gravel, trace organics. Slight organic odor.
SS		24/4		0.1	3 2 2 1			2-4': Top 2": Wet, loose, grey, coarse to fine SAND, trace fine gravel. Bottom 2": Wet, loose, grey, fine SAND, trace organics.
SS		24/20	5	0.2	3 3 2 2			4-6': Top 9": Wet, loose, grey, coarse to fine SAND, trace fine gravel. Bottom 11": Wet, loose, grey, SILT (native).
								Bottom of Exploration at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

12/11/00

Reviewed by: J. McMullen **Date:**

MUDDY_RIVER_BL_MRCG.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
CG-SED-2

Client: Boston Parks and Recreation Department
Project Location: Charles Gate
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 7/25/00 **End:** 7/25/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 4.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/5	0	0.2	4 3 2 4			0-2': Wet, loose, brownish-grey, coarse to fine SAND, some organics, trace gravel.
SS		24/6		0.2	2 7 1 2			2-4': Wet, loose, grey, medium to fine SAND, trace organics. Large rock stuck in tip.
SS		24/20	5	0.2	5 1 1 1			4-8': Wet, loose, grey, coarse to fine SAND, some gravel, trace debris.
SS		24/18		NA	5 3 7 2			6-8': As above.
SS		24/12		0.2	5 4 2 1			8-10': Top 9": Wet, loose, grey, coarse to fine SAND, some gravel. Bottom 3": Wet, loose, grey, medium to fine SAND, some silt, slight organic odor (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
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MR - Mud Rotary
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OTHER:
AGS - Above Ground Surface

REMARKS

12/11/00

Reviewed by: J. McMullen **Date:**

MUDDY_RIVER_BL_MRCG.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
CG-SED-3

Client: Boston Parks and Recreation Department
Project Location: Charles Gate
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 7/27/00 **End:** 7/27/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 6.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/3		NA	2 2 5 1			0-2': Wet, loose, grey, coarse to fine SAND, some gravel, little organics, slight organic odor.
SS		24/4		NA	10 2 1 1			2-4': Wet, loose, grey, coarse to fine SAND, some large gravel, little organics, slight organic odor, trace brick.
SS		24/4	5	NA	5 2 1 2			4-6': As above.
SS		24/8		NA	4 4 5 7			6-8': Wet, loose, grey, coarse to fine SAND, trace gravel, trace organics.
SS		24/20		NA	8 8 8 7			8-10': Wet, medium dense, grey, medium to fine SAND, coarse sand layer at top (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

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REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRCG.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
CG-SED-4

Client: Boston Parks and Recreation Department
Project Location: Charles Gate
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 7/28/00 **End:** 7/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 6.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/4		1.4	1(12") 1(12")			0-2': Wet, very loose, black/grey, coarse to fine SAND, little silt and organics, strong petroleum odor.
SS		24/8		1.0	WOR 2 4 4			2-4': Top 4": Wet, very loose, black, coarse to fine SAND. Bottom 4": Wet, loose, black/grey, coarse to fine SAND, some organics, trace fine gravel, slight odor.
SS		24/4	5	NA	4 5 4 6			4-6': Wet, loose, black/grey, coarse to fine SAND, some organics, trace fine gravel, slight odor.
SS		24/4		NA	4 1 4 1			6-8': Wet, loose, grey, coarse to fine SAND, trace fine gravel, slight petroleum odor.
SS		24/18		NA	5 10 12 24			8-10': Top 12": Wet, medium dense, grey, medium to fine SAND, slight odor. Bottom 6": Wet, dense, grey, coarse to fine SAND, some gravel and shell fragments (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRCG.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
CG-SED-5

Client: Boston Parks and Recreation Department
Project Location: Charles Gate
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 7/28/00 **End:** 7/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 5.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/12	0	0.1	3 3 1 2			0-2': Top 3": Wet, loose, black, coarse to fine SAND, some gravel. Bottom 9" Wet, very loose, grey, fine SAND and SILT, trace clay and shell fragments.
SS		24/24		NA	2 1 3 2			2-4': Top 12": Wet, loose, grey, coarse to fine SAND, some gravel. Bottom 12": Wet, loose, grey, fine SAND and SILT, trace shell fragments, strong organic odor (native).
			5					Bottom of Exploration at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL MRCG.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
CG-SED-6

Client: Boston Parks and Recreation Department
Project Location: Charles Gate
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 7/28/00 **End:** 7/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 6.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/8	0	2.8	Push WOR			0-2': Top 2": Wet, very loose, black, coarse to fine SAND, some gravel, slight petroleum odor. Bottom 6": Wet, very loose, black, coarse to fine SAND, trace gravel and brick fragments.
SS		24/10		0.1	8 5 3 2			2-4': Wet, loose, black, coarse to fine SAND, trace gravel and brick fragments.
SS		24/8	5	NA	3 3 1 1			4-6': Top 2": Wet, loose, black, coarse to fine SAND, trace gravel. Bottom 6": Wet, loose, black, fine SAND and SILT.
SS		24/6		NA	2 2 2 2			6-8': Wet, loose, black/grey, medium to fine SAND, trace brick fragments.
SS		24/18		0.1	2 1 1 2			8-10': Wet, very loose, grey, medium to fine SAND and SILT.
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL MRCG.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-01

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, Andy
Drilling Date: Start: 10/18/00 **End:** 10/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 1.3
Abandonment Method: Collapsed
Field Screening Instrument: None
Logged By: J. Zametske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
HA		24/0						0-2': No recovery.
HA		24/8						2-4': Wet, black to grey, medium to fine SAND and CLAY, some organics. Petroleum odor and sheen.
			5					Bottom of Exploration at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

0-2 ft. had no recovery due to the auger tip failing to capture the fluid, low-density organic material which resides at a depth of 0-2 ft.

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL_MRHBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-02

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Bob & Matt
Drilling Date: Start: 7/19/00 **End:** 7/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		0.0	1 2 3 15			0-2': Wet, very loose, black, coarse to fine SAND, little organics (leaves, sticks), trace fine gravel.
SS		24/4		0.0	32 35 5 4			2-4': Wet, dense, black to grey, coarse to fine SAND, little organics, trace fine gravel.
SS		24/2	5	0.1	3 3 4 4			4-6': Wet, loose, grey, coarse to fine, SAND.
SS		24/7		0.1	3 5 7 11			6-8': Wet, medium dense, grey, coarse to fine SAND, 2" of organics at spoon tip. Heavy organic odor (native).
SS		24/8		0.0	6 6 6 8			8-10': Wet, medium dense, grey, coarse to fine SAND, little organic silt (peat), strong organic odor (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL_MRHBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-03

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Bob & Matt
Drilling Date: Start: 7/19/00 **End:** 7/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 0.1
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/2	0	0.0	3 6 3 3			0-2': Wet, loose, grey, coarse to fine SAND, trace organics (decomposing leaves, sticks, etc).
SS		24/18		0.0	3 3 3 5			2-4': Wet, loose, grey, coarse to fine SAND, some organics (5" of pure peat, brown), little silt. Heavy organic odor (native).
			5					Bottom of Exploration at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-04

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Bob & Matt
Drilling Date: Start: 7/20/00 **End:** 7/20/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/3	0	0.0	1 2 3 5			0-2': Wet, loose, black, coarse to fine SAND, trace fine gravel and organics, decomposed leaves, sticks, etc. (no odor).
SS		24/18		0.0	2 3 9 12			2-4': Wet, medium dense, black to grey, coarse to fine SAND and organic SILT. (Heavy organic odor), little organic debris, decomposed leaves, sticks, etc.
SS		24/5	5	0.0	5 3 3 4			4-6': Wet, loose, dark grey, coarse to fine SAND and organic SILT (2" layer at tip of spoon), moderate organic odor.
SS		24/24		0.0	5 5 7 8			6-8': Wet, medium dense, grey and brown, organic, SILT, little medium to fine sand. Strong organic (peat) odor (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-05

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Bob & Matt
Drilling Date: Start: 7/21/00 **End:** 7/21/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/10	0	0.0	5 6 4 4			0-2': Wet, loose, black, coarse to fine SAND, some fine gravel, little silt (no odors), trace organics.
SS		24/14		0.2	10 9 10 18			2-4': Wet, medium dense, black, coarse to fine SAND, trace fine gravel, organics, decomposed leaves, sticks, silt, and glass.
SS		24/11	5	0.0	26 26 24 18			4-6': Wet, dense, black, coarse to fine SAND, trace fine gravel and trace silt (no odors).
SS		24/24		0.1	5 6 6 7			6-8': Wet, medium dense, grey, coarse to fine SAND, some fine gravel (native).
SS		24/18		0.0	5 5 8 7			8-10': Top 8 ": Wet, medium dense, grey, coarse to fine SAND some silt with organics. Bottom 10": Wet, medium dense, grey, coarse to fine SAND (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRHBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-06

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Bob & Matt
Drilling Date: Start: 7/25/00 **End:** 7/25/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.6
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/6	0	0.2	8 4 5 4			0-2': Wet, loose, black to grey, coarse to fine SAND, some organics, decomposed leaves, sticks, trace gravel. Slight organic odor.
SS		24/4		0.2	10 8 8 6			2-4': Wet, medium dense, grey, medium to fine SAND, little black (organics), trace fine gravel. 3.5- 4" diameter rock protruding from tip of spoon. Moderate organic odor.
SS		24/8	5	0.1	11 9 8 11			4-6': Wet, medium dense, grey to brown, coarse to fine SAND and fine GRAVEL, trace brown silt.
SS		24/18		0.0	11 12 27 56			6-8': Top 9": Wet, medium dense, grey to brown, medium to fine SAND. Middle 3": Brown PEAT. Bottom 6": Wet, very dense, grey, fine SAND and SILT (native).
								Bottom of Exploration at 8 feet BGS
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRHBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
BBF-SED-07

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		0.4	WOR			0-2': Wet, very loose, coarse to fine SAND and organic SILT. Strong petroleum odor.
SS		24/18		0.4	WOR			2-4': Wet, very loose, black, fine SAND and SILT, trace organics.
SS		24/24	5	NA	WOR			4-6': Top 20": As above. Bottom 4": Peat in tip.
SS		24/14		0.0	Push			6-8': Wet, very loose, grey, fine SAND and SILT, trace peat (native). Strong organic odor.
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
BBF-SED-08

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		0.0	WOR			0-2': Top 3":Wet, loose, black, ORGANIC MATTER, some grass and leaves. Bottom 3": Wet, loose, black coarse to fine SAND and SILT.
SS		24/5		0.0	3 4 2 3			2-4': Wet, loose, grey, coarse to fine SAND and GRAVEL, little silt.
SS		24/12	5	NA	2 1 1 3			4-6': Wet, very loose, grey, coarse to fine SAND and GRAVEL, little silt, (native).
			10					End of Boring at 6 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-09

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.3	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT, trace gravel.
SS		24/14		0.0	WOR			2-4': Wet, very loose, grey/brown-black, medium to fine SAND and PEAT, trace shell fragments (native).
			5					End of Boring at 4 feet BSG.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
BBF-SED-10

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT. 2" of Peat in tip.
SS		24/18		0.0	WOR			2-4': Wet, very loose, brown-black, medium to fine SAND and PEAT (native). Strong organic odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-11

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Matt
Drilling Date: Start: 7/25/00 **End:** 7/25/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.7
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/3	0	0.0	2 1 WOH WOH			0-2: Wet, very loose, black, coarse to fine SAND, some brick and glass, trace organics, decomposed leaves, sticks, and fine gravel (in spoon tip).
SS		24/4		0.0	1 3 3 2			2-4': Wet, loose, black, ORGANICS, decomposed leaves, trace coarse to fine gravel and glass. Moderate organic odor.
SS		24/5	5	0.0	5 3 1 4			4-6': Wet, loose, black to grey to brown, coarse to fine SAND, little organics, peat, trace silt and fine gravel.
SS		24/22		0.0	5 5 19 22			6-8': Wet, dense, black, coarse to fine SAND, some organics (decomposed leaves, sticks, etc.), trace fine gravel and silt.
SS		24/24		0.0	8 22 17 20			8-10': Top 12" Wet, dense, black, coarse to fine SAND. Bottom 12" Wet, Dense, grey SILT (native).
			10					Bottom of Exploration at 10 ft.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL MRNBBF.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-12

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/24	0	0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/18		0.0	WOR			2-4': As above.
SS		24/20	5	NA	WOR			4-6': As above.
SS		24/20		0.0	WOR 7 8 11			6-8': Wet, medium dense, grey, coarse to fine SAND. 2" of clay in tip of spoon (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
BBF-SED-13

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT. Slight petroleum odor.
SS		24/20		0.0	WOR			2-4': Wet, very loose, brown to black, coarse to fine SAND and organic SILT, trace fine gravel.
SS		24/12	5	0.4	2 5 3 3			4-6': Wet, loose, grey, medium to fine SAND (native).
			10					End of Boring at 6 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
BBF-SED-14

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/18		0.0	WOR			2-4': Wet, very loose, grey, fine SAND and SILT, trace shells (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-15

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Matt
Drilling Date: Start: 7/26/00 **End:** 7/26/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.8
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/0	0	NA	4 30 35 14			0-2': Organics (black) consisting of decomposed leaves, grass and moderately sized sticks/ branches. (No sample)
SS		24/2		0.0	5 10 3 3			2-4': Wet, medium dense, dark grey, medium to fine SAND, some organics (peat and leaves), trace fine gravel.
SS		24/24	5	0.0	2 1 1 2			4-6': Top 14" Wet, very loose, dark grey to grey, coarse to fine SAND and organic SILT, Bottom 10" Wet, very loose, grey SILT, some peat (native).
SS		24/24		0.0	1 WOH 2			6-8': Wet, very loose, grey, organic SILT (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J McMuller **Date:** 12/11/00

MUDDY_RIVER_BL_MRNBSF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-16

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 9/6/00 **End:** 9/6/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/24	0	0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT, trace clay.
SS		24/12		0.0	Push			2-4': As above.
SS		24/10	5	0.0	1 1 1 2			4-6': Wet, very loose, grey, fine SAND and SILT, trace shells (native).
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J McMuller **Date:** 12/11/00

MUDDY_RIVER_BL_MRNBSF.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-17

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Matt
Drilling Date: Start: 7/26/00 **End:** 7/26/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/20	0	0.0	4 5 2 2			0-2': Top 2": Wet, loose, black, ORGANICS (decomposed leaves, sticks, twigs). Bottom 18": Wet, loose, grey, coarse to fine SAND and SILT, trace fine gravel.
SS		24/15		0.0	3 15 36 18			2-4': Wet, dense, grey, coarse to fine SAND and SILT, some brick, concrete, glass, steel screw, trace organics.
SS		24/6	5	0.0	14 26 11 8			4-6': Wet, dense, grey, coarse to fine SAND and SILT, trace medium gravel (native).
SS		24/24		0.0	7 6 2 2			6-8': Top 6": Wet, medium dense, grey, medium to fine SAND and SILT. Middle 12": Wet, medium dense, grey, coarse to fine SAND. Bottom 6": PEAT.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-18

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Matt
Drilling Date: Start: 7/27/00 **End:** 7/27/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 1.2
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/22	0	0.0	WOH 1(12") 2			0-2': Wet, very loose, grey, SILT and ORGANICS. Strong organic odor.
SS		24/24		0.0	2 1 2 2			2-4': Wet, very loose, grey, organic SILT, some peat, trace fine sand.
SS		24/24	5	0.0	3 3 3 3			4-6': Wet, loose, grey, organic, SILT, some peat, trace clay (native). 6-8': Wet, loose, grey, organic, SILT, some peat, trace clay (native).
SS		24/24		0.0	3 3 6 9			
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
BBF-SED-19

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glenn & Tom
Drilling Date: Start: 8/15/00 **End:** 8/15/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		0.6	WOR			0-2': Wet, very loose, black, medium to fine SAND and ORGANICS.
SS		24/1		NA	7 6 4 3			2-4': Wet, loose, black, ORGANICS.
SS		24/12	5	0.0	2 2 2 3			4-6': Wet, loose, grey, coarse to fine SAND, trace gravel.
SS		24/8		NA	8 2 2 3			6-8': As above.
SS		24/12		0.0	1 2 1 2			8-10': Top 6": Wet, very loose, grey, coarse to fine SAND, trace gravel. Bottom 12": Wet, very loose, grey, fine SAND and SILT (native). Strong odor.
			10					Bottom of Exploration at 10 ft BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-20

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glenn & Tom
Drilling Date: Start: 8/14/00 **End:** 8/14/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		NA	Push			0-2': Wet, very loose, black, medium to fine SAND and organic SILT. Oily sheen.
SS		24/18		NA	WOR			2-4': As above.
SS		24/22	5	NA	Push			4-6': Wet, very loose, grey, fine SAND and PEAT (native). Strong organic odor.
								Bottom of Exploration at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-21

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glenn & Tom
Drilling Date: Start: 8/14/00 **End:** 8/14/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0		WOR			
SS		24/22		NA				0-2': Wet, very loose, black, coarse to fine SAND and organic SILT. Oily sheen, petroleum odor.
SS		24/22		NA	4 2 7 8			2-4': Wet, very loose, black, coarse SAND and organic SILT. Oily sheen, petroleum odor. Brick in tip of spoon.
SS		24/6	5	NA	16 15 7 6			4-6': Wet, medium dense, coarse to fine SAND and GRAVEL, some brick.
SS		24/2		NA	7 2 3 3			6-8': Wet, loose, black, coarse to fine SAND and GRAVEL, some brick and concrete.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-21A

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glenn & Tom
Drilling Date: Start: 8/14/00 **End:** 8/14/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0		WOR			
SS		24/22		NA				0-2': Wet, very loose, black, coarse SAND, trace organic SILT. Oily sheen, petroleum odor.
SS		24/8		NA	7 7 3 4			2-4': Wet, loose, black, coarse to fine SAND, some gravel, trace wood and organics.
SS		24/22	5	NA	3 3 2 2			4-6': Wet, loose, black, coarse to fine SAND, trace gravel, 3" peat in tip.
SS		24/22		NA	1 1 1 1			6-8': Wet, very loose, grey, fine SAND and organic SILT (native). Strong odor.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-22

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glenn & Tom
Drilling Date: Start: 8/14/00 **End:** 8/14/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		NA	Push			0-2': Wet, very loose, black, medium to fine SAND and organic SILT, trace gravel.
SS		24/22		NA	WOH			2-4': Wet, very loose, grey, fine SAND and SILT, some peat (native). Strong organic odor.
			5					Bottom of Exploration at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
BBF-SED-23

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glenn & Tom
Drilling Date: Start: 8/15/00 **End:** 8/15/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 14
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		1.1	WOR/24			0-2': Wet, very loose, black, medium to fine SAND and ORGANICs, black sheen.
SS		24/8		0.4	4 1 2 1			2-4': Wet, very loose, grey, coarse to fine SAND, trace brick.
SS		24/8	5	0.4	3 2 2 4			4-6': As above.
SS		24/4		NA	3 3 4 4			6-8': Wet, loose, grey, coarse to fine SAND and SILT.
SS		24/6		NA	1 1 2 2			8-10': Wet, very loose, grey, coarse to fine SAND, trace brick.
SS		24/4	10	NA	2 1 1 2			10-12': As above.
SS		24/10		0.0	WOR WOR 4 3			12-14': Wet, very loose, grey, fine SAND and SILT (native). Strong organic odor.
			15					Bottom of Exploration at 14 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
BBF-SED-24

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/11/00 **End:** 8/11/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		1.2	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/12		NA	Push			2-4': Top 9": As above. Bottom 3": Wet, very loose, grey, fine SAND and SILT, trace peat (native).
SS		24/18	5	3.3	WOR 1 2 2			4-6': Wet, very loose, grey, fine SAND and SILT, trace peat (native).
SS		24/20		0.0	3 5 5 5			6-8': Wet, medium dense, grey, fine SAND and SILT, trace shells (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Duplicate sample obtained at the 6-8 foot sample interval.

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-25

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/11/00 **End:** 8/11/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		1.2	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT. Slight petroleum odor.
SS		24/22		0.0	WOR			2-4': As above.
SS		24/18	5	NA	Push			4-6': Top 12": As above. Botom 6": Wet, very loose, grey, fine SAND and SILT (native). Strong organic odor.
SS		24/24		0.0	2 3 5 5			6-8': Wet, loose, grey, fine SAND and SILT (native). Strong organic odor.
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-26

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/11/00 **End:** 8/11/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 14
Depth of Water (ft.): 3.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		2.0	Push			0-2': Wet, very loose, black, coarse to fine SAND and organic SILT, trace gravel and peat in tip of spoon.
SS		24/6		NA	WOH			2-4': Wet, very loose, black, coarse to fine SAND and organic SILT, trace gravel.
SS		24/10	5	1.2	WOH WOH WOH WOH			4-6': As above.
SS		24/8		NA	WOH			6-8': As above.
SS		24/16		NA	2 2 1 2			8-10': Top 8": As above. Bottom 8": Wet, very loose, grey, fine SAND, trace silt and shell fragments (native). Strong organic odor.
SS		24/22	10	NA	WOH 1 2 1			10-12': Wet, very loose, grey, coarse to fine SAND, some silt (native). Organic odor.
SS		24/18		0.0	1 1 1 1			12-14': As above.
			15					End of Boring at 14 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-27

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/11/00 **End:** 8/11/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		1.7	Push			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/18		NA	WOR			2-4': As above.
SS		24/22	5	3.3	WOR			4-6': As above.
SS		24/22		0.8	Push			6-8': Wet, very loose, grey, fine SAND and SILT, little organics, trace shells (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
BBF-SED-28

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/9/00 **End:** 8/9/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/.33		7.6	Push			0-2': Wet, very loose, grey, coarse to fine SAND, little organics, trace silt.
SS		24/12		5.2	1 1 1 2			2-4': Wet, very loose, grey, coarse to fine SAND, trace gravel and brick.
SS		24/23	5	NA	1 1 1 1			4-6': Wet, very loose, grey, coarse to fine SAND, trace gravel.
SS		24/24		NA	1 1 3 4			6-8': As above.
SS		24/8		NA	2 2 5 6			8-10': As above.
SS		24/18	10	12.6	1 8 9 11			10-12': Top 12": As above. Bottom 6": Wet, medium dense, grey, fine SAND, trace gravel (native).
			15					Bottom of Exploration at 12 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNSBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-29

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/9/00 **End:** 8/9/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/4		2.8	Push			0-2': Wet, very loose, black, medium to fine SAND and ORGANICS.
SS		24/2		NA	WOR WOR 1 1			2-4': Wet, very loose, black, medium to fine SAND and ORGANICS, trace wood chunks.
SS		24/6	5	1.0	2 1 1 2			4-6': Wet, very loose, black/grey, coarse to fine SAND, trace silt and organics.
SS		24/18		1.2	1 2 2 4			6-8': Wet, loose, grey, coarse to fine SAND, some silt, trace gravel (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNSBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-30

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 7/27/00 **End:** 7/27/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 1.4
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/20	0	0.0	WOH (24")			0-2': Wet, very loose, grey, organic SILT and PEAT, trace coarse sand. Strong organic odor.
SS		24/24		0.0	2 5 6 8			2-4': Wet, medium dense, grey SILT, some organics and peat (native).
SS		24/24	5	0.0	5 5 5 5			4-6': Wet, medium dense, SILT, some organics and peat (native).
								Bottom of Exploration at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-31

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 7/28/00 **End:** 7/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/18	0	0.0	3 2 1 2			0-2': Wet, very loose, black to brown, medium to fine SAND (street sand, run off debris), trace silt and asphalt, brick and glass.
SS		24/8		0.0	10 5 2 3			2-4': Wet, loose, black to brown, medium to fine SAND, trace silt and asphalt, brick and glass.
SS		24/14	5	0.0	6 5 4 3			4-6': Wet, loose, black to brown, medium to fine SAND, little organic silt, trace anthropogenic material.
SS		24/14		0.0	2 3 3 3			6-8': Wet, loose, black, medium to fine SAND, some organic silt, trace sticks, leaves, and glass. Strong organic odor.
SS		24/24		0.0	1 2 2 2			8-10': Top 12": Wet, very loose, brown, medium to fine SAND. Bottom 12": Wet, loose, black, medium to fine SAND and organic SILT, trace roots, twigs, and peat.
SS		24/24	10	0.0	13 12 12 9			10-12': Wet, medium dense, black to grey, fine SAND and SILT, little shells, trace organics and peat (native).
								Bottom of Exploration at 12 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-32

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/9/00 **End:** 8/9/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		11	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics.
SS		24/20		NA	Push			2-4': Wet, very loose, black, medium to fine SAND, some organics. Slight odor.
SS		24/22	5	5.4	Push			4-6': Wet, very loose, black, medium to fine SAND, trace silt and organics.
SS		24/22		NA	Push			6-8': As above.
SS		24/18		4.2	2 3 3 2			8-10': Top 6": As above. Bottom 12": Wet, loose, grey, fine SAND and SILT (native).
SS		24/20	10	NA	1 1 2 1			10-12": Wet, very loose, grey, fine SAND and SILT (native).
			15					Bottom of Exploration at 12 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-33

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 7/27/00 **End:** 7/27/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.8
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/8		0.0	WOH (12" 4 2			0-2': Wet, loose, black to grey, coarse to fine SAND and ORGANICS (decomposed leaves, sticks, grass), trace wire and glass.
SS		24/8		0.0	5 3 3 4			2-4': Wet, loose, grey, coarse to fine SAND, some organics (sticks leaves twigs), trace fine gravel.
SS		24/24	5	0.0	4 4 3 4			4-6': Wet, loose, grey, coarse to fine SAND, some organics (peat and decomposed leave, sticks), little silt.
SS		24/24		0.0	3 5 8 14			6-8': Wet, medium dense, grey, SILT, little medium to fine sand, little organics (peat, sticks) (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-34

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/8/00 **End:** 8/8/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		NA	Push			0-2': Wet, very loose, black, medium to fine SAND and ORGANICS.
SS		24/22		NA	Push			2-4': As above.
SS		24/18	5	NA	WOR (18") 2			4-6': Top 12": As above. Bottom 6": Wet, very loose, grey, SILT and fine SAND, some organics.
SS		24/18		NA	1 (12") 2 2			6-8': Wet, very loose, grey, fine SAND and SILT, trace organics (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-35

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/8/00 **End:** 8/8/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		NA	Push			0-2': Wet, very loose, black, medium to fine SAND, little silt and organics.
SS		24/20		NA	Push			2-4': As above.
SS		24/12	5	NA	Push			4-6': As above.
SS		24/24		NA	Push			6-8': As above.
SS		24/18		NA	6 9 17 26			8-10': Top 5": As above. Bottom 13": Wet, medium dense, grey, coarse to fine SAND and SILT, little gravel (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-36

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/8/00 **End:** 8/8/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/1	0	NA	WOR/24			0-2': Wet, very loose, black, medium to fine SAND and ORGANICS.
SS		24/24		NA	WOR/24			2-4': As above.
SS		24/22	5	NA	WOR 5 6 7			4-6': As above.
SS		24/18		NA	3 4 3 5			6-8': Top 5": As above. Bottom 13": Wet, loose, grey, fine SAND, some silt (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-37

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 7/28/00 **End:** 7/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/15	0	0.0	WOH (24)			0-2': Wet, very loose, black, ORGANICS (sticks, decomposed leaves, twigs), little silt, trace glass and metal.
SS		24/0		NA	WOH (24)			2-4': No recovery.
SS		24/24	5	0.0	WOH (24)			4-6': Wet, very loose, black, organic, SILT, some sticks and peat.
SS		24/18		0.0	WOH 1 1 4			6-8': Top 6": Wet, very loose, grey, SILT. Bottom 12": Wet, loose, black, SILT, little sticks and peat (native).
SS		24/24		0.0	6 7 8 8			8-10': Wet, medium dense, grey, SILT (native). Stratified organic layer approximately 4" in length in center of spoon.
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-38

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/7/00 **End:** 8/7/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 5.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.5	Push			0-2': Wet, very loose, black/grey, coarse to fine SAND, some silt, trace organics and gravel.
SS		24/4		NA	4 2 1 2			2-4': As above.
SS		24/3	5	NA	2 (24")			4-6': Wet, very loose, black/grey, coarse to fine SAND, some silt, trace organics and gravel.
SS		24/22		0.1	WOR 2 2 2			6-8': Wet, loose, grey, medium to fine SAND and SILT, trace organics and gravel (native). Strong organics odor.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12/11/00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-39

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/7/00 **End:** 8/7/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		9.0	Push			0-2': Wet, very loose, black, medium to fine SAND and ORGANICS. 2-4': As above.
SS		24/22		NA	Push			
SS		24/22	5	5.4	Push			4-6': Top 19": As above. Bottom 3": Wet, very loose, black, SILT. Strong petroleum odor.
SS		24/20		NA	Push			6-8': Wet, very loose, black, SILT. Strong petroleum odor.
SS		24/20		1.3	Push			8-10': Top 8": As above. Bottom 12": Wet, very loose, grey/brown, SILT, some peat, little organics (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
BBF-SED-40

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 7/3/00 **End:** 7/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.8
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		0.0	3 8 8 9			0-2': Wet, medium dense, grey, coarse to fine SAND, little organics (leaves, sticks), trace glass and fabric.
SS		24/8		0.0	8 7 3 5			2-4': Wet, medium dense, grey, coarse to fine SAND, little fine gravel, trace organics (leaves sticks, root mass).
SS		24/6	5	0.0	10 20 25 15			4-6': Wet, dense, grey, coarse to fine SAND, little silt, trace fine gravel.
SS		24/24		0.0	6 4 5 4			6-8': Top 18": Wet, loose, grey, coarse to fine SAND and organic SILT,organic layer (.5", root mass). Bottom 6": Wet, loose, grey, coarse to fine, SAND (native).
SS		24/24		0.0	7 8 8 10			8-10': Wet, medium dense, grey, SILT, some organics and peat, trace fine sand (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-41

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/4/00 **End:** 8/4/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 5.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		0.5	Push			0-2': Top 9": Wet, very loose, dark grey, coarse to fine SAND, trace gravel. Sheen. Bottom 3": Wet, very loose, grey, fine GRAVEL, trace sand.
SS		24/24		NA	4 1 1 1			2-4': Wet, very loose, grey, coarse to fine SAND, some gravel.
SS		24/8	5	0.2	4 1 1 3			4-6': Wet, very loose, grey, coarse to fine SAND, little gravel (native).
SS		24/20		0.7	3 3 3 4			6-8': Wet, loose, grey, coarse to fine SAND and SILT (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
BBF-SED-42

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 7/3/00 **End:** 7/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/4		0.0	WOH 5 6 6			0-2': Wet, medium dense, black to grey, coarse to fine SAND and ORGANICS (roots, sticks, leaves), trace glass, wood, and leather.
SS		24/8		0.0	6 4 3 3			2-4': Wet, loose, dark grey, coarse to fine SAND, little fine gravel, trace organics (root mass, sticks, grass).
SS		24/24	5	0.0	1 1 1 1			4-6': Top 6": Wet, very loose, grey, coarse to fine SAND. Bottom 18": Wet, very loose, grey, organic, SILT, some peat and shells (native).
SS		24/24		0.0	3 2 3 1			6-8': Wet, loose, grey, fine, SAND and SILT, some shells.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
BBF-SED-43

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/1/00 **End:** 8/1/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 1.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOH (24			0-2': Wet, very loose, black, coarse to fine SAND and SILT, some organics (peat, root mass, leaves, sticks).
SS		24/24		0.0	3 2 1 (12")			2-4': Wet, very loose, black to grey, coarse to fine SAND, little silt, little organics (sticks, leaves, roots), trace brick and concrete.
SS		24/24	5	0.0	WOH			4-6': Wet, very loose, black and grey, organic, SILT.
SS		24/24		0.0	1 1 1 2			6-8': Top 12": Wet, very loose, black, organic, fine SAND and SILT, little organic debris (sticks, root mass). Bottom 12": Wet, very loose, grey, SILT (native).
SS		24/24		0.0	3 4 6 6			8-10': Wet, loose, clayey SILT (native).
			10					Bottom of Exploration at 10 ft BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-44

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/4/00 **End:** 8/4/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 6.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/18	0	0.4	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics, trace silt.
SS		24/20		NA	Push			2-4': As above.
SS		24/20	5	0.4	Push			4-6': Top 14": As above. Bottom 6": PEAT.
SS		24/22		0.4	WOH			6-8': Top 11": Wet, very loose, black, medium to fine SAND, some organics. Bottom 11": PEAT, some shells, trace silt (native).
								Bottom of Exploration at 8 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-45

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/1/00 **End:** 8/1/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/22	0	0.0	1 1(18")			0-2': Wet, very loose, grey and brown, organic, SILT (peat, root mass), trace fine sand and glass.
SS		24/1		0.0	1 1(18")			2-4': Wet, very loose, brown, organic, SILT, some peat.
SS		24/24	5	0.0	3 3 3 1			4-6': Top 6": Wet, loose, black, organic, SILT (muck). Bottom 18": Wet, loose, black, coarse to fine SAND and SILT, trace fine gravel and organics.
SS		24/24		0.0	2 1 2 2			6-8': Wet, very loose, grey to dark grey, SILT, trace shells (native).
SS		24/24		0.0	3 4 6 6			8-10': Wet, loose, grey to dark grey, SILT (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-46

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 6.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		3.2	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics, trace silt.
SS		24/22		NA	Push			2-4': As above.
SS		24/22	5	0.8	Push			4-6': Top 14": As above. Bottom 8": PEAT (native).
SS		24/24		0.2	WOH			6-8': Top 12": PEAT. Bottom 12": Wet, very loose, grey, fine SAND and SILT, some shell fragments (native). Strong organic odor.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-1-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-47

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		1.4	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics.
SS		24/20		NA	Push			2-4': As above.
SS		24/20	5	2.5	Push			4-6': Top 18": As above. Bottom 2": PEAT.
SS		24/20		0.1	WOH			6-8': Wet, very loose, brown, fine SAND and SILT, some peat (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-1-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-48

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/1/00 **End:** 8/1/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		0.0	WOR			0-2': Wet, very loose, black, ORGANIC SILT. Slight petroleum odor.
SS		24/12		0.0	WOH			2-4': Wet, very loose, black, ORGANIC MUCK, some silt, organic breakdown present.
SS		24/24	5	0.0	1 1 (12") 1			4-6': Top 12": Wet, very loose, grey, ORGANIC SILT. Bottom 12": Wet, very loose, grey, SILT, some shells and peat (native).
SS		24/24		0.0	1 1 2 1			6-8': Wet, very loose, grey, SILT, some peat and shells (native).
			10					Bottom of Exploration at 8 ft BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-49

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/8			WOH			0-2': Wet, very loose, black, SILT, some organics.
SS		24/22			WOH			2-4': Wet, very loose, black, SILT, some organics.
SS		24/24	5		1 1 1 1			4-6': Top 18": Wet, very loose, black, SILT, some organics. Bottom 6": Wet, very loose, grey, SILT (native).
SS		24/20			3 2 1 3			6-8': Top 5": Wet, very loose, grey, SILT (native). Bottom 15": Wet, very loose, grey, SILT, some shells (native).
SS		24/24			2 3 4 4			8-10': Wet, loose, grey, SILT, some shells (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
BBF-SED-50

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18			1 1(18")			0-2': Top 6": Phragmite degraded ROOTS. Bottom 12": Wet, very loose, black, ORGANIC MUCK.
SS		24/9			6 5 3 3			2-4': Top 4": Wet, loose, black, ORGANIC MUCK. Bottom 5": Wet, loose, black, coarse SAND and GRAVEL.
SS		24/24	5		2 2 3 4			4-6': Top 14": Wet, loose, black, coarse SAND, some small gravel. Bottom 10": Wet, loose, grey, SILT (native).
SS		24/20			4 5 4 3			6-8': Wet, loose, grey, SILT (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
BBF-SED-51

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20			WOH			0-2': Wet, very loose, black, ORGANIC MUCK (phragmite matter).
SS		24/24			6 1 1 3			2-4': Top 3": Wet, very loose, grey, fine SAND and GRAVEL. Bottom 21": Wet, very loose, grey, SILT, some shells (native).
SS		24/24	5		2 4 4 6			4-6': Wet, loose, grey, SILT, some shells (native).
								Bottom of Exploration at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-52

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		5.9	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics.
SS		24/20		NA	WOR (12") Push (12")			2-4': As above.
SS		24/22	5	7.2	Push (18") 6			4-6': Top 6": As above. Bottom 18": Wet, very loose, black, SAND and SILT, trace clay and organics.
SS		24/20		1.2	5 8 6 9			6-8': Wet, medium dense, grey, coarse to fine SAND, trace fine gravel (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-53

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		12.4	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics.
SS		24/24		NA	Push			2-4': As above.
SS		24/10	5	8.8	WOR			4-6': Wet, very loose, black, coarse to fine SAND, some silt and organics. Petroleum odor.
SS		24/12		2.6	7 10 11 8			6-8': Wet, medium dense, grey, coarse to fine SAND, trace gravel (native).
			10					Bottom of Exploration at 8 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-54

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		NA	Push			0-2': Wet, very loose, black, medium to fine SAND, trace gravel and organics. Petroleum odor.
SS		24/24		NA	Push			2-4': As above.
SS		24/24	5	NA	WOR			4-6': As above.
SS		24/20		NA	Push			6-8': As above.
SS		24/20		NA	8 5 7 6			8-10': Top 5": Wet, medium dense, black, fine SAND, some silt. Bottom 15": Wet, medium dense, grey, coarse to fine SAND, trace fine gravel (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12.11.00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-55

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		NA	Push			0-2': Wet, very loose, black, medium to fine SAND, some organics. Strong petroleum odor.
SS		24/22		NA	Push			2-4': As above.
SS		24/20	5	NA	Push			4-6': As above.
SS		24/12		NA	WOR (12" 8 9			6-8': Wet, medium dense, black, medium to fine SAND, some organics. Strong petroleum odor.
SS		24/20		NA	7 5 5 5			8-10': Wet, medium dense, grey, coarse to fine SAND, some gravel, (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12.11.00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-56

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		NA	3 4 7 10			0-2': Wet, medium dense, black, coarse to fine SAND, some gravel and organics. Petroleum odor.
SS		24/12		NA	9 9 6 4			2-4': Wet, medium dense, grey, coarse to fine SAND, trace gravel (native).
SS		24/12	5	NA	5 7 8 7			4-6': As above.
								Bottom of Exploration at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
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BOREHOLE LOG
BBF-SED-57

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/2/00 **End:** 8/2/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		NA	Push			0-2': Wet, very loose, black, medium to fine SAND, trace fine gravel, organic. Petroleum odor.
SS		24/2		NA	Push			2-4': As above.
SS		24/24	5	NA	Push			4-6': As above.
SS		24/20		NA	WOR 6 6 6			6-8': Top 8": As above. Bottom 12": Wet, medium dense, grey, fine SAND and SILT, trace organics.
SS		24/18		NA	2 1 6 7			8-10': Top 9": Wet, loose, grey, fine SAND and SILT, trace organics. Bottom 9": Wet, medium dense, grey, coarse to fine SAND, trace gravel (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Cambridge, MA 02139

BOREHOLE LOG
BBF-SED-58

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/1/00 **End:** 8/1/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/8	0	9.6	Push			0-2': Wet, very loose, black, silty, SAND, some organics. Petroleum odor.
SS		24/12		7	WOR			2-4': As above.
SS		24/20	5	NA	Push			4-6': Top 18": As above. Bottom 2": Wet, very loose, grey, fine SAND and SILT.
SS		24/20		4.2	3 7 8 7			6-8': Wet, medium dense, grey, coarse to fine SAND (native).
SS		24/20		NA	6 7 8 6			8-10': Wet, medium dense, grey, coarse to fine SAND (native).
SS		24/20	10	5.7	8 8 7 6			10-12': Wet, medium dense, grey, coarse to fine, SAND (native). Bottom of Exploration at 12 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
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BOREHOLE LOG
BBF-SED-59

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/1/00 **End:** 8/1/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 5.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/4	0	4.7	Push			0-2': Wet, very loose, black to tan, medium to fine SAND, some gravel, trace silt. Sheen, petroleum odor.
SS		24/2		NA	WOR 2 1(12")			2-4': As above.
SS		24/8	5	1.2	Push			4-6': Wet, very loose, black to tan, medium to fine SAND, some gravel, trace silt. Sheen, petroleum odor.
SS		24/6		NA	1 1 1 1			6-8': Wet, very loose, black to tan, medium to fine SAND, some gravel, trace silt. Sheen, petroleum odor.
SS		24/18		0.0	2 2 2 3			8-10': Wet, very loose, grey, fine SAND and SILT, trace shells and organics (native). Strong organic odor.
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
BBF-SED-60

Client: Boston Parks and Recreation Department
Project Location: Back Bay Fens
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/1/00 **End:** 8/1/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K. Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/2		1.7	Push			0-2': Wet, very loose, medium to fine SAND, little silt, trace shell fragments. Petroleum odor.
SS		24/18		2.2	WOR (12"			2-4': Wet, very loose, medium to fine SAND, little silt, trace shell fragments. Visible sheen on soil and petroleum odor.
SS		24/12	5	NA	WOR 4 2 1			4-6': Wet, very loose, black, medium to fine SAND, little silt, trace shell fragments. Visible sheen on soil and petroleum odor. Rock in tip of spoon.
SS		24/6		NA	1 1 1 2			6-8': Wet, very loose, black, coarse to fine SAND, trace fine gravel. Petroleum odor.
SS		24/8		0.1	1 1 1 1			8-10': Wet, very loose, grey, fine SAND and SILT (native). Strong organic odor.
SS		24/8	10	0.1	1 1 1 1			10-12': Wet, very loose, grey, fine SAND and SILT (native). Strong organic odor.
			15					Bottom of Exploration at 12 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL_MRNBBF.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
RW-SED-01

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/11/00 **End:** 8/11/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 1.1
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		0.0	1 1 1 1			0-2': Wet, very loose, black, medium to fine SAND, trace organics (sticks, root mass), glass and brick.
SS		24/18		0.0	2 3 26 71			2-4': Wet, medium dense, black, medium to fine SAND, trace fine gravel, brick and glass. Slight petroleum odor.
SS		24/24	5	0.0	58 31 37 53			4-6': Top 8": Wet, very dense, black, medium to fine SAND, trace brick and glass. Petroleum odor. Middle 8": Wet, very dense, brown, coarse to fine SAND and GRAVEL, trace silt. Bottom 8": Wet, very dense, grey, coarse to fine SAND and GRAVEL, trace silt.
SS		24/24		0.0	83 88 53 47			6-8': Top 22": Wet, very dense, dark grey to grey, coarse to fine SAND and GRAVEL, trace medium gravel, glass and brick. Bottom 2": Wet, very dense, brown, coarse to fine SAND, little fine gravel, trace silt (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Open hole boring.

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-02

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/11/00 **End:** 8/11/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/0		0.0	1 1 1 9			0-2': No Recovery.
SS		24/12		0.0	15 21 38 37			2-4': Wet, very dense, black, fine SAND, trace fine gravel and brick. Slight petroleum odor.
SS		24/24	5	0.0	8 18 21 21			4-6': Top 12": Wet, dense, black, fine SAND, trace brick and glass. Bottom 12": Wet, dense, tan, coarse to fine SAND and GRAVEL, trace brick and glass. Slight petroleum odor.
SS		24/24		0.0	20 23 31 36			6-8': Wet, very dense, tan, coarse to fine SAND and GRAVEL, trace medium gravel, brick and glass.
SS		24/24		0.0	37 34 27 22			8-10': As above.
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Open hole boring.
Boring abandoned at 10 feet BGS.

Reviewed by: J McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Cambridge, MA 02139

BOREHOLE LOG
RW-SED-03

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/16/00 **End:** 8/16/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 1.7
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/3		0.0	1 1 1 9			0-2': Wet, very loose, black, fine SAND, trace organics.
SS		24/5		0.0	5 5 4 3			2-4': Wet, loose, black, fine SAND and grey/brown SILT, trace fine gravel. Clear stratification observed.
SS		24/12	5	0.0	5 7 5 5			4-6'.: Wet, medium dense, black, fine SAND and grey SILT, trace gravel.
SS		24/12		0.0	18 21 15 12			6-8': Wet, dense, black to grey, coarse to fine SAND, some fine gravel, little grey silt, trace brick.
SS		24/3		0.0	12 5 6 11			8-10': Wet, medium dense, black, fine SAND, trace brick.
			10					
SS		24/24		0.0	60 56 83 86			10-12': Wet, very dense, black to grey, coarse to fine SAND, little silt, trace fine gravel (native).
								End of Boring at 12 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
RW-SED-04

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/10/00 **End:** 8/10/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 16
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/6	0	0.0	WOR			0-2': Wet, very loose, black, ORGANICS (muck, sticks, leaves, root mass), little fine sand, trace glass and paper.
SS		24/4		0.0	1 1 1 1			2-4': Wet, very loose, black, fine, SAND and ORGANICS (muck leaves, sticks). Moderate petroleum odor.
SS		24/24	5	0.0	WOR 1 2 2			4-6': Top 9": Wet, very loose, black, fine, SAND and ORGANICS. Middle 3": Wet, very loose, black, fine GRAVEL and SILT. Bottom 12": Wet, very loose, grey, SILT and ORGANIC MUCK (leaves and root mass).
SS		24/10		0.0	3 7 5 4			6-8': Wet, medium dense, black to grey, coarse to fine SAND, some silt, trace fine gravel.
SS		24/24		0.0	3 3 4 6			8-10': Wet, loose, black to grey, ORGANIC MUCK (sticks, leaves), little grey silt and fine gravel.
SS		24/20	10	0.0	18 25 12 19			10-12': Wet, dense, dark grey to grey, coarse to fine SAND, some silt, little fine gravel, trace organics.
SS		24/24		0.0	24 26 21 31			12-14': Wet, dense, grey, coarse to fine SAND (native).
SS		24/24	15	0.0	21 37 37 48			14-16': As above.
								Bottom of Exploration at 16 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-05

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/14/00 **End:** 8/14/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.7
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/24	0	0.0	WOR (18") 3			0-2': Wet, very loose, black, organic SILT and DECOMPOSED LEAVES,STICKS AND PEAT, some coarse to fine sand, trace brick and asphalt. Slight petroleum odor.
SS		24/10		0.0	9 21 27 19			2-4': Wet, dense, black to grey, coarse to fine SAND and organic SILT (muck), trace fine gravel, no odor.
SS		24/22	5	0.0	5 17 16 25			4-6': Wet, dense, black to grey, medium to fine SAND and organic SILT (muck).
SS		24/24		0.0	9 18 29 23			6-8': Wet, dense, grey, coarse to fine SAND and SILT, trace fine gravel (native).
SS		24/24		0.0	9 10 15 19			8-10': Wet, dense, grey, fine to medium SAND and SILT, trace fine gravel (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-06

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/14/00 **End:** 8/14/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOH			0-2': Wet, very loose, black to grey, MUCK. Worms noted in spoon.
SS		24/24		0.0	WOH			2-4': Wet, very loose, black, organic, MUCK.
SS		24/24	5	0.0	WOH (18")			4-6': Top 8": Wet, very loose, black to grey, organic, SILT and PEAT, some organic muck. Bottom 16": Wet, very loose, grey, coarse to fine SAND.
SS		24/24		0.0	1 1 (12") 3			6-8': Wet, very loose, black to grey, organic, SILT, some organic muck, trace coarse sand and wood.
SS		24/18		0.0	9 12 25 29			8-10': Wet, dense, grey, coarse to fine SAND, little grey silt (native).
SS		24/24	10	0.0	8 9 12 15			10-12': Wet, medium dense, grey, coarse to fine SAND and SILT (native).
			15					Bottom of Exploration at 12 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
8X - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-07

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 1.3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		0.2	WOH			0-2': Wet, very loose, black, organic SILT, trace fine sand. Petroleum odor.
SS		24/10		0.0	5 2 2 7			2-4': Wet, loose, black and brown, coarse to fine SAND and organic SILT, some oxidized, trace fine gravel and brick.
SS		24/12	5	0.0	4 14 11 18			4-6': Wet, medium dense, black to grey, coarse to fine SAND and SILT, trace fine gravel, some oxidation present.
SS		24/24		0.0	10 17 25 32			6-8': Wet, dense, black to grey, coarse to fine SAND and SILT, trace fine gravel (native).
SS		24/24		0.0	15 25 33 31			10-12': Wet, very dense, brown (oxidized), coarse to fine SAND, trace gravel (native).
			10					End of Boring at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
8X - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-08

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/3	0	0.0	WOH (12") 3 1			0-2': Wet, very loose, black to grey, coarse to fine SAND and SILT, trace paper.
SS		24/14		0.2	1 5 9 16			2-4': Top 8": Wet, medium dense, black to grey, coarse to fine SAND and SILT, trace organics. Bottom 6": Wet, medium dense,grey, SILT, some brown peat.
SS		24/22	5	0.0	13 19 21 26			4-6': Wet, dense, dark grey to grey, coarse to fine SAND and SILT (native).
SS		24/24		0.0	29 42 38 47			6-8': Top 12": Wet, very dense, dark grey, medium to fine SAND. Bottom 12": Wet, light brown SILT, some coarse sand, trace gravel (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-09

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 14
Depth of Water (ft.): 0.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/3	0	0.4	WOH			0-2': Wet, very loose, black, organic SILT. Petroleum odor.
SS		24/8		0.8	WOH			2-4': Wet, very loose, black, organic SILT. Petroleum odor and visible sheen.
SS		24/22	5	0.8	WOH			4-6': Wet, very loose, black, organic SILT. Petroleum odor and visible sheen.
SS		24/24		0.6	WOH			6-8': Wet, very loose, black, organic SILT. Slight petroleum odor and visible sheen.
SS		24/24		0.0	1 2 2 1			8-10': Wet, very loose, black, organic SILT. Peat layer (6 inches) observed at spoon tip.
SS		24/24	10	0.0	2 2 2 2			10-12': Wet, very loose, grey/black organic SILT, trace gravel, fine sand, and shell fragments (native).
SS		24/20		0.0	2 2 3 4			12-14': Wet, loose, grey, medium to fine SAND (native).
			15					End of Boring at 14 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-11

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/19/00 **End:** 10/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 1.3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/8	0					0-2 ft.: Wet, black to grey, coarse SAND and SILT, some organics. Petroleum odor and visible sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
5X - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-12

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/19/00 **End:** 10/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/9	0					0-2': Wet, black to grey, coarse SAND and SILT, some organics. Petroleum odor and visible sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
5X - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
RW-SED-13

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/19/00 **End:** 10/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 1.2
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/10	0					0-2': Wet, black to grey, coarse SAND and SILT, some organics. Petroleum odor and visible sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
RW-SED-16

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/19/00 **End:** 10/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 1.4
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/10	0					0-2': Wet, black to grey, fine SAND and SILT, some organics. Petroleum odor and visible sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller Date: 12-11-00

MUDDY_RIVER_BL MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-17

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/19/00 **End:** 10/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/16	0					0-2': Wet, black to grey, fine SAND and SILT, some organics. Petroleum odor and visible sheen.
								Bottom of Exploration at 2 ft. BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-18

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/19/00 **End:** 10/19/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 2.9
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/20	0					0-2': Wet, black, fine SAND and Silt, some organics, odor, sheen.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-19

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/31/00 **End:** 8/31/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.4	WOR			0-2': Wet, very loose, black, coarse to fine SAND and organic SILT, trace gravel.
SS		24/22		0.1	WOR			2-4': Wet, very loose, black, coarse to fine SAND and organic SILT, little clay, trace gravel.
SS		24/18	5	0.0	Push			4-6': Wet, very loose, grey, fine SAND, some clay, little silt, trace organics (native).
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-20

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/31/00 **End:** 8/31/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		0.8	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/20		0.0	Push			2-4': Wet, very loose, grey, fine SAND, some clay and silt (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-21

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/31/00 **End:** 8/31/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		2.0	WOR			0-2': Wet, very loose, black/grey, medium to fine SAND and organic silt.
SS		24/20		0.3	WOR WOR 2 1			2-4': Wet, very loose, grey, fine SAND, some peat and clay (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-22

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/30/00 **End:** 8/30/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOR			0-2': Wet, very loose, black/grey, medium to fine SAND and SILT, some clay, trace organics.
SS		24/22		0.0	Push			2-4': Wet, very loose, grey, fine SAND and CLAY, trace organics (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-23

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/30/00 **End:** 8/30/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		1.4	WOR			0-2': Wet, very loose, black, coarse to fine SAND and organic SILT.
SS		24/18		0.0	WOR 7 4 1			2-4': Wet, medium dense, black-grey, coarse to fine SAND, trace organics. Organic odor.
SS		24/22	5	0.0	WOR 2 4 2			4-6': Wet, loose, black-grey, coarse to fine SAND, trace gravel and brick.
SS		24/23		0.0	2 4 7 6			6-8': Wet, medium dense, grey, fine SAND and SILT, some clay, trace gravel (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-1-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-24

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/30/00 **End:** 8/30/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 4.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/16		0.0	WOR			0-2': Wet, very loose, black, coarse to fine SAND and organic SILT.
SS		24/1		NA	WOR 10			2-4': As above.
SS		24/18	5	0.0	7 4 3 3			4-6': Wet, very loose, black, fine SAND, trace gravel and clay (native).
			10					End of Boring at 6 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-1-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-25

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/30/00 **End:** 8/30/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/24	0	0.9	WOR			0-2': Wet, very loose, black-grey, coarse to fine SAND, some organics.
SS		24/12		0.0	PUSH			2-4': Wet, very loose, grey fine SAND and SILT, trace organics (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
RW-SED-26

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/30/00 **End:** 8/30/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/20	0	0.9	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/10		0.4	WOR			2-4': Wet, very loose, grey, fine SAND and SILT, trace organics (peat) (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
RW-SED-27

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/30/00 **End:** 8/30/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/14		1.9	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/18		0.6	WOR			4-6': Wet, very loose, fine SAND and SILT, some organics (native). Odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12/1/00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
RW-SED-28

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/29/00 **End:** 8/29/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		0.1	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/24		0.0	WOR			2-4': As above.
SS		24/18		0.0	Push 2 2 3			4-6': Wet, loose, grey, fine SAND, little silt, trace gravel and shell fragments (native).
			5					
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12/1/00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-29

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/29/00 **End:** 8/29/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		1.8	Push			0-2': Wet, very loose, black, medium to fine SAND and organic SILT, some organics.
SS		24/18		0.0	Push Push 2 2			2-4': Top 8": As above. Bottom 10": Wet, very loose, grey, PEAT and CLAY, some fine sand (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-30

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/29/00 **End:** 8/29/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/8		0.4	WOR 7 6			0-2': Wet, very loose, grey, coarse to fine SAND and GRAVEL, trace organics.
SS		24/12		0.0	20 4 2 1			2-4': Wet, loose, black, coarse to fine SAND, trace brick and gravel.
SS		24/4	5	0.0	1 1 1			4-6': As above.
SS		24/6		0.0	1 2 1 2			6-8': Top 3": As above. Bottom 3": PEAT.
SS		24/4		0.0	1 2 2 1			8-10': PEAT (native).
			10					End of Boring at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-31

Client: Boston Parks and Recreation Department
Project Location: Riverway

Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/29/00 **End:** 8/29/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 1.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/24	0	0.0	WOR			0-2': Top 20": Wet, very loose, black, coarse to fine SAND and ORGANICS, trace silt. Bottom 4": Wet, very soft, black, CLAY.
SS		24/24		0.0	WOR			2-4': Top 12": As above. Bottom 12": Wet, very soft, black, fine SAND and CLAY, trace organics.
SS		24/20	5	0.0	WOR			4-6': Wet, very soft, grey, fine SAND and CLAY (native). Strong organic odor.
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-1-00

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CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-32

Client: Boston Parks and Recreation Department
Project Location: Riverway

Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/29/00 **End:** 8/29/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/22	0	0.0	WOR			0-2': Wet, very loose, black-grey, medium to fine SAND and organic SILT, some clay.
SS		24/24		0.0	WOR			2-4': Wet, very loose, grey, fine SAND and CLAY, trace organics (native). Strong organic odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-1-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
RW-SED-33

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/29/00 **End:** 8/29/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.8	WOR			0-2': Wet, very loose, black-grey, medium to fine SAND and organic SILT, some clay, trace peat.
SS		24/24		0.0	WOR			2-4': Wet, very loose, grey, fine SAND and CLAY, trace peat (native). Strong organic odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

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BOREHOLE LOG
RW-SED-34

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/28/00 **End:** 8/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOR			0-2': Wet, very loose, black-grey, medium to fine SAND and organic SILT, some clay, trace peat.
SS		24/24		0.0	WOR			2-4': Wet, very loose, grey, fine SAND and CLAY, trace peat (native). Strong organic odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-1-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

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50 Hampshire Street
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BOREHOLE LOG
RW-SED-35

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/28/00 **End:** 8/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.3	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/18		NA	WOR			2-4': Wet, very loose, black, fine SAND and CLAY (native).
SS		24/24	5	0.0	Push			4-6': Wet, very loose, grey, fine SAND and CLAY (native).
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J.M. Mueller Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
RW-SED-36

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/28/00 **End:** 8/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT, little clay.
SS		24/18		0.0	WOR 1 1 1			2-4': Top 4": As above. Bottom 14": Wet, very loose, grey, fine SAND and CLAY (native). Strong organic odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J.M. Mueller Date: 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-37

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/28/00 **End:** 8/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		1.6	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT, little clay.
SS		24/20		0.0	WOR			2-4': Wet, very loose, black, fine SAND and CLAY, trace organics (native). Organic odor.
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller **Date:** 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-38

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/28/00 **End:** 8/28/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.3	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT. Clay present in tip of spoon.
SS		24/24		0.0	WOR			2-4': Wet, very loose, black, SILTY CLAY, trace organics (native).
SS		24/24		0.0	Push			4-6': Wet, very loose, grey, fine SAND and CLAY (native). Organic odor.
			5					
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMuller **Date:** 12-11-00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
RW-SED-39

Client: Boston Parks and Recreation Department
Project Location: Riverway
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/25/00 **End:** 8/25/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics.
SS		24/4		NA	WOR WOR 10 12			2-4': Wet, very loose, grey, ORGANIC MATERIAL and fine SAND.
SS		24/23	5	0.0	9 10 4 4			6-8': Top 11": Wet, medium dense, grey, coarse to fine SAND, little silt and organics. Bottom 12": Wet, loose, grey, fine SAND and GRAVEL, some silt (till) (native).
			10					End of Boring at 6 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/1/00

MUDDY_RIVER_BL_MRRW.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-01

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/8		4.5	WOR WOR 1 2			0-2': Wet, very loose, grey, coarse to fine SAND, little organics.
SS		24/12		NA	2 1 1 1			2-4': As above.
SS		24/5	5	0.5	2 1 1 2			4-6': Wet, very loose, grey, coarse to fine SAND, little organics, trace silt.
SS		24/18		0.0	10 12 12 15			6-8': Wet, medium dense, light brown, CLAY, little organics (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-02

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		NA	WOR 10			0-2': Top 9": Wet, very loose, black, medium to fine SAND and SILT, some organics. Slight petroleum odor. Bottom 9": Wet, very loose, grey, SILT and CLAY.
SS		24/22		NA	8 7 9 7			2-4': Wet, very stiff, grey, CLAY, some silt (native).
			5					End of boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
LP-SED-03

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/12		0.0	WOR 10			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics.
SS		24/24		0.0	1 7 8 9			2-4': Wet, stiff, grey-yellow, CLAY (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-04

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond

Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 5.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/12	0	0.0	WOH WOH 7 12			0-2': Top 6": Wet, very loose, black, medium to fine SAND and SILT, some organics. Bottom 6": Wet, very stiff, grey, CLAY, trace silt.
SS		24/24		0.0	15 20 18 29			2-4': Wet, hard, grey-yellow, CLAY (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-05

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond

Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/24	0	1.7	Push			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics.
SS		24/22		0.4	6 6 8 8			2-4': Wet, very stiff, grey-yellow, CLAY (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-06

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 5.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0		WOR			0-2': Wet, very loose, medium to fine SAND and SILT, some organics.
SS		24/24		0.0				
SS		24/24		0.0	2 4 5 6			2-4': Top 12": As above. Bottom 12": Wet, stiff, grey-yellow, CLAY (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-07

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0		Push			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics.
SS		24/24		1.7				
SS		24/18		NA	Push			2-4': As above.
SS		24/18		0.0	Push 1 4 4			4-6': Wet, medium stiff, grey, CLAY, some fine sand (native).
			5					
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
SX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-08

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/17/00 **End:** 8/17/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0		Push			0-2': Wet, very loose, medium to fine SAND and SILT, some organics.
SS		24/22		0.0				
					WOR			2-4': Top 8": As above.
SS		24/22		0.0	WOR 3 6			Bottom 14": Wet, soft, grey-green, CLAY (native).
			5					End of Boring at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-09

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0		WOR			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics. 2" clay layer in tip of spoon.
SS		24/24		2.7				
					WOR			2-4': Wet, medium dense, grey, fine SAND, trace silt (native).
SS		24/18		0.6	8 4 5			
					4 6			4-6': As above.
SS		24/20	5	NA	5 4			
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-10

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/7/0 **End:** 8/7/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 0.8
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/6		0.0	2 22 15 15			0-2': Top 3": Wet, black, organic detritus layer. Bottom 4": Wet, dense, grey, SILT, some clay.
SS		24/0		0.0	24 27 17 7			2-4': No recovery.
SS		24/20	5	0.0	2 14 22 18			4-6': Top 10": Wet, dense, light brown, coarse SAND. Bottom 10": Wet, dense, tan, medium to fine SAND.
SS		24/24		0.0	7 8 6 8			6-8': Wet, medium dense, tan, medium to fine SAND, little silt (native).
SS		24/20		0.0	2 3 3 3			8-10': Wet, loose, light grey, SILTY CLAY (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP2.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
LP-SED-11

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/22/00 **End:** 8/22/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics.
SS		24/18		0.0	WOR			2-4': As above.
SS		24/20	5	0.0	4 4 4 4			4-6': Wet, loose, grey, fine SAND (native).
								End of Boring at 6 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
LP-SED-12

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.3	Push			0-2': Wet, very loose, black, medium to fine SAND and SILT, little organics, trace peat.
SS		24/18		0.3	WOH			2-4': As above.
SS		24/18	5	NA	WOH WOH 1 1			4-6': As above.
SS		24/24		0.3	WOH 1 2 1			6-8': Wet, very loose, black-grey, fine SAND and SILT, some peat (native).
			10					End of Boring at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J.McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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BOREHOLE LOG
LP-SED-13

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/23/00 **End:** 8/23/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		0.0	PUSH			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/24		0.0	PUSH			2-4': Wet, very loose, black, medium to fine SAND and organic SILT, trace clay.
SS		24/24	5	NA	WOR WOR 5 6			4-6': Top 18": As above. Bottom 6": Wet, loose, yellow-grey, coarse to fine SAND (native).
SS		24/20		0.0	6 6 8 8			6-8': Wet, medium dense, yellow-grey, coarse to fine SAND (native).
			10					End of Boring at 8 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J.McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-14

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Tom
Drilling Date: Start: 8/18/00 **End:** 8/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/23		3.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and SILT, some peat.
SS		24/12		NA	WOR			2-4': Top 6": As above. Bottom 6": Wet, very loose, black, fine SAND, some peat.
SS		24/24	5	1.4	WOR			4-6': PEAT (native).
SS		24/20		NA	Push			6-8': As above.
			10					End of Boring at 8 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-15

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/22/00 **End:** 8/22/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.): 2.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND, some organic silt, little clay.
SS		24/20		0.0	WOR WOR 2 5			2-4': Top 14": As above. Bottom 6": Wet, loose, grey, fine SAND (native).
			5					End of Boring at 4 feet BGS
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-16

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/23/00 **End:** 8/23/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/24		0.4	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/22		NA	WOR			2-4': As above.
SS		24/18	5	0.4	WOR WOH 5 10			4-6': Top 10": As above. Bottom 8": Wet, stiff, grey, CLAY (native).
SS		24/22		0.0	5 5 5 5			6-8': Top 6": Wet, medium dense, grey, medium to fine SAND, some organics. Middle 12": PEAT. Bottom 4": Wet, medium dense, grey, fine SAND (native).
								End of Boring at 8 feet BGS
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-17

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/21/00 **End:** 8/21/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 4.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/20		3.8	Push			0-2': Wet, very loose, black, medium to fine SAND and SILT. Organic odor.
SS		24/20		3.3	Push			2-4': As above.
SS		24/22	5	NA	Push			4-6': As above.
SS		24/24		NA	Push			6-8': Top 18": As above. Bottom 4": PEAT (native).
SS		24/24		0.3	Push			8-10': As above.
			10					End of Boring at 10 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

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BOREHOLE LOG
LP-SED-18

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/22/00 **End:** 8/22/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 6
Depth of Water (ft.): 3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/24		NA	WOR			2-4': As above.
SS		24/14	5	0.0	8 8 7 6			4-6': Top 4": As above. Bottom 10": Wet, medium dense, yellow-orange, fine SAND (native).
			10					End of Boring at 6 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

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BOREHOLE LOG
LP-SED-19

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/7/00 **End:** 8/7/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 1
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		0.0	11 10 10 3			0-2': Wet, medium dense, black, ORGANICS with detritus layer.
SS		24/24		0.0	2(12) 3 3			2-4': Top 3": As above. Bottom 21": Wet, loose, black, SILT and CLAY, some peat.
SS		24/24	5	0.0	22 12 20 14			4-6': Top 6": Wet, dense, black, SILT and CLAY, some peat. Middle 3": Wet, dense, black, coarse to medium SAND. Bottom 15": Wet, dense, tan, coarse to medium SAND.
SS		24/24		0.0	4 5 3 2			6-8': Wet, loose, tan, coarse to medium, SAND (native).
SS		24/24		0.0	4 4 5 6			8-10': Top 10": Wet, loose, tan, coarse to medium SAND. Bottom 14": Wet, loose, grey, SILT and CLAY (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP2.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-20

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/23/00 **End:** 8/23/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT.
SS		24/12		0.0	WOR			2-4': Top 10": As above. Bottom 2": PEAT.
SS		24/10	5	0.0	Push			4-6': Top 6": Wet, very loose, black, medium to fine SAND and organic SILT. Bottom 4": PEAT (native).
SS		24/20		NA	WOR Push 8 14			6-8': Top 4": Wet, very loose, grey, medium to fine SAND, some organics. Middle 6": PEAT. Bottom 10": Wet, medium dense, grey, coarse to fine SAND, some clay, little silt (native).
			10					End of Boring at 8 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-21

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/21/00 **End:** 8/21/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/22		0.0	WOR			0-2': Wet, very loose, black, medium to fine SAND and SILT, some organics, trace gravel.
SS		24/24		NA	WOR			2-4': As above.
SS		24/24	5	2.0	WOR 1 2 9			4-6': Top 16": As above. Bottom 8": PEAT.
SS		24/22		0.0	8 12 15 16			6-8': Top 12": Wet, medium dense, black, medium to fine SAND and SILT. Bottom 10": Wet, medium dense, red, fine SAND, trace clay (native).
								End of Boring at 8 feet BGS
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-22

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/22/00 **End:** 8/22/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/8		0.0	WOR			0-2': Wet, very loose, black, coarse to fine SAND and organic SILT.
SS		24/18		0.0	WOR			2-4': Wet, very loose, black, coarse to fine SAND and organic SILT, trace peat.
SS		24/16	5	0.0	WOR			4-6': Top 6": As above. Bottom 10": Wet, very loose, grey, organic SILT, some peat.
SS		24/12		0.0	WOR 12 12 11			6-8': Top 6": Wet, medium dense, grey, fine SAND. Middle 2": PEAT. Bottom 4": Wet, medium dense, grey, medium to fine SAND and organic SILT (native).
			10					End of Boring at 8 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

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BOREHOLE LOG
LP-SED-23

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/23/00 **End:** 8/23/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 14
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.0	Push			0-2': Wet, very loose, grey, coarse to fine SAND, trace brick.
SS		24/24		NA	2 1 1 1			2-4': Wet, very loose, grey, coarse to fine SAND.
SS		24/3	5	NA	Push			4-6': As above.
SS		24/10		0.0	1 1 1 1			6-8': As above.
SS		24/18		NA	2 2 3 4			8-10': Top 9": As above. Bottom 9": Wet, loose, grey, coarse to fine SAND, trace gravel (native).
SS		24/12	10	NA	2 1 1 1			10-12': Wet, very loose, grey coarse to fine SAND, little silt, trace organics (native).
SS		24/18		0.0	5 3 2 3			12-14': As above.
			15					End of Boring at 14 feet BGS

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
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Sheet 1 of 1

BOREHOLE LOG
LP-SED-24

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/21/00 **End:** 8/21/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 6.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		2.0	WOR			0-2': Wet, very loose, black, coarse to fine SAND and GRAVEL, trace brick.
SS		24/1		NA	2 for 24			2-4': Wet, very loose, black, fine SAND, some organics.
SS		24/8	5	1.2	1 1 1 1			4-6': Wet, very loose, grey, coarse to fine SAND, trace brick.
SS		24/18		0.0	1 1 1 1			6-8': Top 12": As above. Bottom 6": PEAT (native).
SS		24/14		NA	1 1 2 2			8-10': As above.
			10					End of Boring at 10 feet BGS
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-25

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/21/00 **End:** 8/21/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 14
Depth of Water (ft.): 1.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.0	WOR			0-2': Wet, very loose, black, coarse to fine SAND, some organics.
SS		24/12		NA	WOR			2-4': As above.
SS		24/16	5	1.8	WOR			4-6': As above.
SS		24/12		NA	WOR			6-8': Top 10": As above. Bottom 2": Wet, very loose, black, coarse to fine SAND and GRAVEL.
SS		24/18		NA	WOR			8-10': Top 16": Wet, very loose, black, medium to fine SAND and SILT. Bottom 2": PEAT.
SS		24/22	10	NA	WOR 1 2 1			10-12': Wet, very loose, black, medium to fine SAND and SILT.
SS		24/24		0.6	1 WOH			12-14': Top 18": As above. Bottom 6": Wet, very loose, grey, fine SAND, some peat (native).
			15					End of Boring at 14 feet BGS

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
LP-SED-26

Client: Boston Parks and Recreation Department
Project Location: Leverett Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Glen & Matt
Drilling Date: Start: 8/22/00 **End:** 8/22/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 14
Depth of Water (ft.): 3.5
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: K Dillaway

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		1.9	WOR			0-2': Wet, very loose, black, medium to fine SAND and organic SILT. Sheen and odor.
SS		24/1		NA	Push			2-4': Wet, very loose, black, ORGANIC MUCK, trace sand.
SS		24/14	5	1.6	Push Push 2 12			4-6': Wet, very loose, black, medium to fine SAND and organic SILT. Petroleum odor.
SS		24/22		NA	1 9 8 5			6-8': As above.
SS		24/14		NA	1 1 1 1			8-10': As above.
SS		24/5	10	NA	WOH 1 1 5			10-12': Top 3": As above. Bottom 2": Wet, very loose, black, SILT and fine SAND, some organics.
SS		24/16		0.6	10 11 11 10			12-14': Wet, medium dense, grey, fine SAND (native).
			15					End of Boring at 14 feet BGS

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12/11/00

MUDDY_RIVER_BL MRLP.GPJ CDM_MA.GDT 12/13/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
WL-SED-01

Client: Boston Parks and Recreation Department
Project Location: Willow Pond
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/9/00 **End:** 8/9/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 12
Depth of Water (ft.): 0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/10		0.6	2 1 3 2			0-2': Moist, very loose, black to light brown (tan), coarse to fine SAND, trace organics (vegetation, decomposed vegetation). Strong petroleum odor.
SS		24/3		0.6	2 1 1 1			2-4': Wet, very loose, black to light brown, medium to fine SAND, trace silt. Slight petroleum odor.
SS		24/6	5	1.0	1(12") 1 1			4-6': Wet, very loose, brown and black, medium to fine SAND, little silt, trace organics (peat, decomposed vegetation, sticks). Strong petroleum odor.
SS		24/24		0.2	5 10 11 12			6-8': Top 11": Wet, medium dense, light brown coarse to fine SAND, some silt, trace organics. Middle 3": Wet, medium dense, black, coarse to fine SAND (stained). Bottom 9": Wet, medium dense, orange, coarse to fine SAND. Oxidation at tip of spoon.
SS		24/24		0.0	6 9 10 13			8-10':Top 15": Wet, medium dense, tan, coarse to fine SAND and SILT. Striated with stained, black, medium to fine SAND. Bottom 9": Wet, medium dense, tan, SILT (native).
SS		24/24	10	0.0	9 11 13 17			10-12': Top 11": Wet, medium dense, tan, medium to fine SAND and SILT (native). Middle 1": Wet, medium dense, oxidized (rust color) medium SAND (native). Bottom 12": Wet, medium dense, tan, medium to fine SAND and SILT (native).
			15					Bottom of Exploration at 12 feet BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12/11/00

MUDDY_RIVER_BL MRWL.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
WL-SED-02

Client: Boston Parks and Recreation Department
Project Location: Willow Pond
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/18/00 **End:** 10/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 1.6
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/12	0					0-2': Wet, black to grey, SILT and CLAY, some organics. Odor and sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRWL.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
WL-SED-03

Client: Boston Parks and Recreation Department
Project Location: Willow Pond
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/18/00 **End:** 10/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 2.2
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/16	0					0-2': Wet, black to grey, fine SAND and SILT, some organics. Odor and sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/11/00

MUDDY_RIVER_BL_MRWL.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
WL-SED-04

Client: Boston Parks and Recreation Department
Project Location: Willow Pond
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Hand Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/18/00 **End:** 10/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
HA		24/8	0					0-2': Wet, black to grey, fine SAND and SILT, some organics. Odor and sheen.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. M. Smuller Date: 12-1-00

MUDDY_RIVER_BL_MRWL.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

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Sheet 1 of 1

BOREHOLE LOG
WL-SED-05

Client: Boston Parks and Recreation Department
Project Location: Willow Pond
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/9/00 **End:** 8/9/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 4
Depth of Water (ft.):
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
SS		24/3	0	0.0	11 9 5 55			0-2': Wet, medium dense, brown, coarse to fine, SAND, little fine gravel, trace glass, asphalt, and brick.
SS		24/12		0.0	38 26 22 28			2-4': As above.
			5					Bottom of Exploration at 4 feet BGS.
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. M. Smuller Date: 12-1-00

MUDDY_RIVER_BL_MRWL.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
WL-SED-05B

Client: Boston Parks and Recreation Department
Project Location: Willow Pond
Project Name: Muddy River
Project Number: 1517-28449-SR.SEDSAMP.FIELD

Drilling Contractor: GEO-TEK
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Dave & Mike
Drilling Date: Start: 8/9/00 **End:** 8/9/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 0
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J J Callahan

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/2		0.0	5 4 5 11			0-2': Wet, loose, brown, coarse to fine SAND, some fine gravel, trace glass, asphalt, and brick.
SS		24/6		0.0	27 11 21 29			2-4': Wet, medium dense, brown, coarse to fine SAND, some fine gravel, trace organics (decomposed leaves, sticks), glass, asphalt, and brick.
SS		24/16	5	0.0	10 21 27 31			4-6': Wet, medium dense, brown, coarse to fine SAND, little fine gravel, trace glass.
SS		24/22		0.0	20 31 35 27			6-8': Wet, dense, brown, coarse to fine SAND, little fine gravel, glass and brick.
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Open hole boring.
Abandoned hole at 8 feet BGS.
Cound not confirm native material.

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRWL.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
WD-SED-1

Client: Boston Parks and Recreation Department
Project Location: Wards Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/8/00 **End:** 8/8/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 4.2
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/123		0.0	9 7 6 4			0-2': Top 3": Detritus layer. Bottom 21": Wet, medium dense, black, ORGANIC MUCK, some medium sand.
SS		24/12		0.0	8 7 4 4			2-4': Wet, medium dense, black, ORGANIC MUCK, some medium sand.
SS		24/0	5		11 7 7 8			4-6': No Recovery.
SS		24/20			4 3 3 5			6-8': Wet, loose, dark grey,medium to fine SAND, some silt (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL_MRWD.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

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Sheet 1 of 1

BOREHOLE LOG
WD-SED-2

Client: Boston Parks and Recreation Department
Project Location: Wards Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 2.2
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/9		0.0	18 19 15 10			0-2': Wet, medium dense, grey, medium SAND, some silt, little organics at surface.
SS		24/0		0.0	4 9 4 3			2-4': No Recovery.
SS		24/8	5	0.0	26 44 51 37			4-6': Wet, very dense, black, medium SAND, little cobble and brick.
SS		24/24		0.0	51 53 40 40			6-8': As above.
SS		24/24		0.0	30 30 20 23			8-10': As above.
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/1/00

MUDDY_RIVER_BL_MRWD.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
WD-SED-3

Client: Boston Parks and Recreation Department
Project Location: Wards Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: CDM
Drilling Method/Rig: Auger/
Drillers: Jay, Fred, & Andy
Drilling Date: Start: 10/18/00 **End:** 10/18/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 2
Depth of Water (ft.): 4.9
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: J. Zarnetske

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
HA		24/9						0-2': Wet, grey, fine SAND, some gravel.
								Bottom of Exploration at 2 feet BGS.
			5					
			10					
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12/1/00

MUDDY_RIVER_BL_MRWD.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
WD-SED-4

Client: Boston Parks and Recreation Department
Project Location: Wards Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/4/00 **End:** 8/4/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 2.9
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/18		0.0	8 8 9 20			0-2': Top 7": Wet, medium dense, brown, organic SILT. Bottom 11": Wet, dense, dark grey, medium SAND.
SS		24/20		0.0	10 25 35 33			2-4': Top 6": Wet, very dense, dark grey, medium SAND. Bottom 14": Wet, very dense, light grey, medium to fine SAND.
SS		24/23	5	0.0	21 23 19 24			4-6': Wet, dense, light grey, medium SAND, some silt (native).
SS		24/24		0.0	16 24 47 30			6-8': Wet, very dense, light grey, SILTY SAND (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL_MRWD.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

Sheet 1 of 1

BOREHOLE LOG
WD-SED-5

Client: Boston Parks and Recreation Department
Project Location: Wards Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 10
Depth of Water (ft.): 1.3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 Inches	Graphic Log	Stratum Designation	Material Description
			0					
SS		24/			4 4 4 4			0-2': No recovery.
SS		24/18			18 22 12 15			2-4': Top 9": Wet, dense, grey, organic, SILT and MUCK. Bottom 9": Wet, dense, grey, coarse SAND.
SS		24/20	5		5 20 20 27			4-6': Wet, dense, light grey, coarse SAND, some small gravel.
SS		24/3			8 12 15 20			6-8': Wet, medium dense, light grey, coarse SAND, rock stuck in tip of spoon.
SS		24/10			21 23 30 39			8-10': Top 5": Wet, very dense, grey, medium SAND. Bottom 5": Wet, dense, grey, fine SAND, some silt (native).
			10					Bottom of Exploration at 10 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen **Date:** 12-11-00

MUDDY_RIVER_BL_MRWD.GPJ CDM_MA.GDT 12/14/00

CAMP DRESSER & McKEE

CDM

50 Hampshire Street
Cambridge, MA 02139

BOREHOLE LOG
WD-SED-6

Client: Boston Parks and Recreation Department
Project Location: Wards Pond
Project Name: Muddy River
Project Number: 1517-28449-SR-SEDSAMP.FIELD

Drilling Contractor: Geo-Tek
Drilling Method/Rig: DTC/3" Split Spoon
Drillers: Matt & Dave
Drilling Date: Start: 8/3/00 **End:** 8/3/00
Borehole Coordinates:
N E

Surface Elevation (ft.):
Total Depth (ft.): 8
Depth of Water (ft.): 3
Abandonment Method: Collapsed
Field Screening Instrument: OVM w/ 10.2 PID
Logged By: JLG

Sample Type	Sample Number	Sample Recovery (inches)	Elev. Depth (ft.)	Field Instrument Reading (ppm)	Blows per 6 inches	Graphic Log	Stratum Designation	Material Description
SS		24/8	0		2 3 11 16			0-2': Wet, medium dense, grey, coarse SAND, some fine gravel, trace wood.
SS		24/10			4 22 82 56			2-4': Top 6": Wet, very dense, grey, coarse SAND, some fine gravel, trace detritus. Bottom 2": Wet, very dense, grey, SILT.
SS		24/9	5		53 43 41 31			4-6': Wet, very dense, grey, coarse SAND, some fine gravel, little silt.
SS		24/20			5 6 12 9			6-8': Wet, medium dense, grey, coarse SAND, some medium silt (native).
			10					Bottom of Exploration at 8 feet BGS.
			15					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: J. McMullen Date: 12-11-00

MUDDY_RIVER_BL MRWD.GPJ CDM_MA.GDT 12/14/00

ATTACHMENT F-3

PREVIOUS ENVIRONMENTAL STUDIES SUMMARY ANALYTICAL RESULTS

Table 4.1

SUMMARY OF ANALYTICAL RESULTS
MUDDY RIVER CONDUIT

Analyte(s)	Units	Detection Limit	Concentrations								
			Sample Location								
			Brookline Ave Gate House	Brookline Ave Gate House Manhole 91	Upstream MA Tpke Manhole 170	Upstream MA Tpke Manhole 171	Under MA Tpke	Upstream Siphon Structure	Siphon Structure	Deerfield St Manhole Z	Deerfield St Manhole Y
TCLP Volatile Organics (VOAS)	ug/L	5–10	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCLP Semi–Volatile Organics (ABN)	ug/L	10–50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCLP Pesticides	ug/L	0.05–1	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCLP Herbicides	ug/L	0.4–2	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCLP RCRA Metals											
Barium	ug/L	3	318	472	880	1,350	550	620	700	1,280	1,000
Cadmium	ug/L	3	8	16	92	69	7	16	36	25	40
Chromium	ug/L	7	ND	17	ND	21	ND	ND	ND	ND	44
Lead	ug/L	35	239	1,910	5,080	8,950	2,350	3,640	6,730	3,130	10,700
Mercury	ug/L	0.2	ND	0.6	ND	ND	ND	ND	ND	ND	ND
Other	ug/L	–	ND	ND	ND	ND	ND	ND	ND	ND	ND
Petroleum Hydrocarbons	mg/Kg	20	220	610	11,000	20,000	69,500	38,300	3,050	25,000	4,600
Oil and Grease	mg/Kg	20	280	930	13,000	25,000	103,000	53,400	4,750	39,000	5,700
PCB	ug/Kg	100	ND	120	1,900	800	ND	ND	ND	ND	400
Total Solids	%	1	81.1	72.3	55.5	76.1	37.5	53.9	76.1	41.2	79.5
Reactivity											
Cyanide	mg/Kg	6	ND	660	24	320	328	216	72.9	ND	ND
Sulfide	mg/Kg	6	ND	190	ND	320	232	50.5	65.5	ND	ND
Paint Filter Test	–	–	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected	Free Liquid Detected

Note:
ND = Not Detected

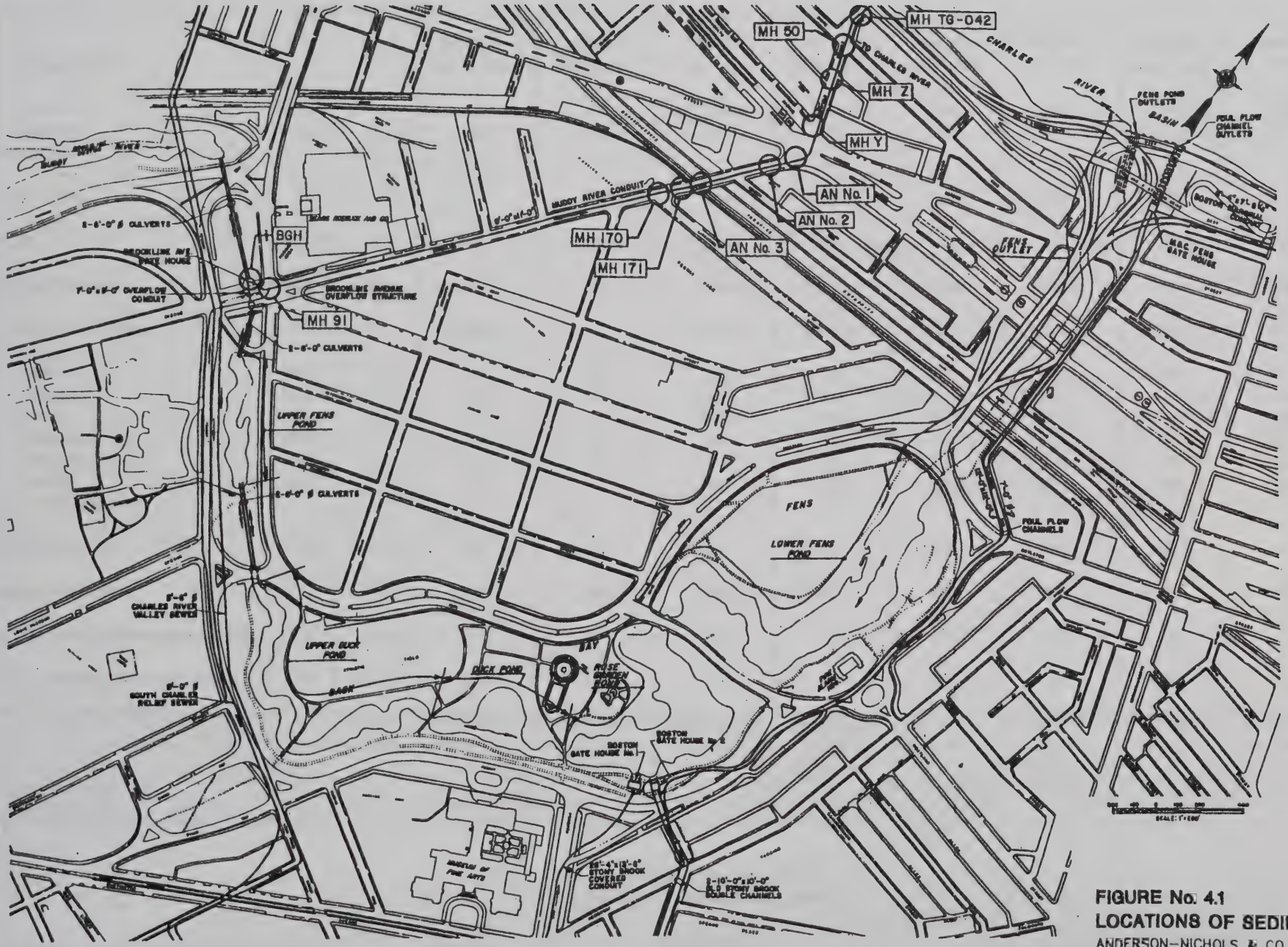


FIGURE No. 4.1
LOCATIONS OF SEDIMENT SAMPLES
ANDERSON–NICHOLS & CO., INC JUNE 19

Table C-3: Results of 1992 Corps of Engineers Muddy River Sediment Analysis[a,b]

Parameter	Riverway							
	S-1	S-2[c]	S-3[d]	S-4	S-5[d]	S-6	S-7	S-8[c]
Arsenic	2.1	8.2	17	19	20	19	31	23
Cadmium	< 0.7	4.6	1.7	1.9	5.2	1.9	1.3	2.2
Chromium	17	150	30	46	130	44	37	53
Copper	56	310	170	230	570	170	220	230
Lead	220	1400	410	730	2100	420	350	380
Mercury	0.2	1.6	0.8	1.6	3.2	0.9	0.2	0.7
Nickel	12	45	28	42	72	32	35	37
Zinc	130	630	350	460	660	290	360	450
Petrol. Hydr.	530	16000	1400	4000	11000	1300	1200	1800
PCBs	0.6 -	0.8	-	3.6	- - -			
% Fines[f]	< 1	62	67	64	50	36	37	30

Notes:
a: Samples collected June, 1992.
b: All values in mg/g unless noted.
c: Sample collected from within Phragmites stands.
d: Sample analysed for TCLP metals and volatile and semi-volatile organics.
e: Mean excludes Sample S-1.
f: See Attachment I for grain size curves.

Parameter	Back Bay Fens							
	S-9	S-10	S-11[d]	S-12[c,d]	S-13	S-15[c]	S-16[d]	Mean[e]
Arsenic	21	24	10	30	6.8	14	31	20
Cadmium	6.5	4.9	6.2	12	<1.3	7.1	2.8	4.0
Chromium	590	38	61	93	30	91	49	103
Copper	690	240	360	1000	160	340	270	350
Lead	1900	390	1100	1800	490	870	660	930
Mercury	6.4	1.4	0.6	1.6	1.4	2.0	2.2	1.7
Nickel	100	28	38	52	23	43	35	43
Zinc	1400	510	720	1500	390	630	770	660
Petrol. Hydr.	4200	1400	4400	1500	260	2100	530	3650
PCBs	- 1.8	2.6 -	-	- 0.3	1.8			
% Fines[f]	42	36	19	25	59	49 28	43	

Table C-3: Results of 1992 Corps of Engineers Muddy River Sediment Testing

Parameter	Sample Locations - Riverway								
	92-1	92-2	92-3	92-4	92-5	92-6	92-7	92-8	Mean
Metals									
Arsenic	2.1	8.2	17	19	20	19	31	23	20
Cadmium	< 0.7	4.6	1.7	1.9	5.2	1.9	1.3	2.2	2.7
Chromium	17	150	30	46	130	44	37	53	70
Copper	56	310	170	230	570	170	220	230	270
Lead	220	1400	410	730	2100	420	350	380	830
Mercury	0.2	1.6	0.8	1.6	3.2	0.9	0.2	0.7	1.3
Nickel	12	45	28	42	72	32	35	37	42
Zinc	130	630	350	460	660	290	360	450	460
TPH	530	16000	1400	4000	11000	1300	1200	1800	5240
PCBs	0.6	-	0.8	-	3.6	-	-	-	2.2
% Fines	< 1	62	67	64	50	36	37	30	49

Notes:
1: Samples collected June, 1992.
2: All values in mg/kg dry weight unless noted.
3: Sample collected from within Phragmites stands.
4: Sample analyzed for TCLP metals and volatile and semi-volatile organics.
5: Mean excludes Sample 92-1.
6: See Attachment I for grain size curves.

Table C-3: Continued.

Parameter	Sampling Locations - Back Bay Fens							
	92-9	92-10	92-11	92-12	92-13	92-15	92-16	Mean
Metals								
Arsenic	21	24	10	30	6.8	14	31	20
Cadmium	6.5	4.9	6.2	12	<1.3	7.1	2.8	5.8
Chromium	590	38	61	93	30	91	49	414
Copper	690	240	360	1000	160	340	270	440
Lead	1900	390	1100	1800	490	870	660	1030
Mercury	6.4	1.4	0.6	1:6	1.4	2.0	2.2	2.2
Nickel	100	28	38	52	23	43	35	46
Zinc	1400	510	720	1500	390	630	770	850
TPH	4200	1400	4400	1500	260	2100	530	2060
PCBs	-	1.8	2.6	-	-	-	0.3	1.6
% Fines	42	36	19	25	59	49	28	39

Notes:
1: Samples collected June, 1992.
2: All values in mg/kg dry weight unless noted.
3: Sample 92-12 collected from within Phragmites stands.
4: Sample 92-11, 92-12, 92-16 also analyzed for TCLP metals and volatile and semi-volatile organics.
5: Sample 92-14 not collected.
6: See Attachment C-2 for grain size curves.

Table C-4: Volatile and Semi-volatile Organic Compounds Detected in Muddy River Sediments During 1992 Corps Testing.

Parameter	Sample Location[1,2]			
	92-3	92-5	92-11	93-12
PAHs				
pyrene	65	32	29	19
fluoranthene	25	10	12	5.2
chrysene	24	9.1	7.2	4.9
benzo(a)anthracene	24	7.3	6.3	4.3
phenanthrene	22	9.6	13	2.2
indeno(1,2,3-cd)pyrene	18	6.4	4.1	7.0
benzo(k)fluoranthene	18	5.6	5.8	6.1
benzo(b)fluoranthene	17	5.4	5.6	5.9
benzo(a)pyrene	16	5.5	5.1	4.9
benzo(g,h,i)perylene	13	5.6	5.6	6.7
anthracene	6.5	2.3	2.3	1.2
dibenz(a,h)anthracene	3.8	1.0	1.0	0.9
dibenzofuran	3.0	0.9	1.4	0.5
fluorene	2.4	1.7	1.9	0.8
napthalene	2.6	0.7	1.6	0.5
acenaphthene	1.9	1.2	1.4	0.3
2-methylnapthalene	1.3	0.6	1.1	0.4
acenaphthylene	0.3	0.2	0.2	0.4
Total PAHs	264	105	104	71
Other Semi-Volatiles				
1,4-dichlorobenzene	0.10	0.22	0.32	-
1,2-dichlorobenzene	-	-	0.25	0.23
2-methylphenol	0.10	-	-	-
4-methylphenol	0.40	0.44	-	-
diethylphthalate	0.10	0.09	0.32	-
di-n-butylphthalate	0.31	0.29	20	1.2
butylbenzylphthalate	-	0.51	-	-
bis(2-ethylhexyl)phthalate	1.9	6.7	7.7	1.8
Volatiles				
Acetone	0.26	0.47	0.31	0.22
Carbon disulfide	0.01	0.01	0.01	0.01
Methylene chloride	0.05	0.04	0.06	0.11
2-butanone	0.08	0.17	0.12	0.10
toluene	-	0.01	-	-
O-Xylene	-	0.01	0.01	-

Notes:

1. See Plate C-1 for sample locations.
2. All values in mg/kg on a dry weight basis.

NOTES:
ALL SAMPLES WERE CORES TAKEN TO A DEPTH OF ABOUT 2 FEET.
SAMPLES S-2, S-8, S-12 AND S-15 WERE TAKEN WITHIN PHRAGMITES STANDS.

SCALE
400' 0 400' 800'

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM MASS

MUDDY RIVER RECONNAISSANCE STUDY

JUNE 1992-SEDIMENT SAMPLING STATIONS

Table C-6: Results of Corps 1995 Sediment Tests Conducted in Conjunction with Biotoxicity Tests.

Parameter	Sample Location				
	95-1	95-2	95-3	95-4	95-5
Total Organic Carbon (%)	11.0	6.4	17.0	6.0	16.0
TPH (mg/kg)	28000	6800	19000	5300	9700
Metals (mg/kg)					
Mercury	0.80	< 0.30	0.90	0.40	1.0
Lead	1600	290	650	320	850
Arsenic	19	4.4	9.5	3.1	11
Cadmium	6.9	1.5	4.0	1.1	3.4
Chromium	390	31	85	26	61
Copper	390	120	280	98	260
Nickel	47	15	37	19	29
Zinc	870	330	710	300	490
Total PAHs (mg/kg)	134	240	165	135	83
Total PCBs (mg/kg)	0.37	0.10	0.16	0.31	1.6
Selected Pesticides (ug/kg)					
Heptachlor	20	< 1.1	<1.8	10	17
a,g-Chlordane	176	79	93	18	38
4,4'-DDE and 4-4'-DDD	1010	169	286	70	433
4-4'-DDT	78	42	50	29	100
Endrin	53	31	43	< 3.3	< 6.0
beta-BHC	45	69	37	46	38

Notes:
1. All values presented on dry weight basis.
2. See Figure C-1 for sample locations.

Table C-7: Volatile and Semi-volatile Organic Compounds Detected in Sediment Tests Conducted in Conjunction with 1995 Corps Biotoxicity Testing.

Parameter	Sample Location				
	95-1	95-2	95-3	95-4	95-5
PAHs (mg/kg)					
pyrene	36	40	32	29	14
fluoranthene	19	34	26	18	13
chrysene	12	18	14	11	6.3
benzo(a)anthracene	8.3	17	11	10	5.4
phenanthrene	9.1	22	14	14	7.4
benzo(k)fluoranthene	14	31	20	14	10
benzo(b)fluoranthene	13	29	18	13	9.5
benzo(a)pyrene	10	21	14	10	7.4
indeno(1,2,3-cd)pyrene	2.7	5.5	4.0	2.4	2.3
benzo(g,h,i)perylene	3.0	4.5	3.8	2.3	2.1
anthracene	2.1	6.2	2.8	4.0	1.6
dibenz(a,h)anthracene	0.6	1.2	0.7	0.5	0.6
dibenzofuran	0.4	1.6	0.6	1.2	0.3
fluorene	1.3	3.4	1.9	2.4	0.9
napthalene	0.3	1.2	0.3	0.7	0.3
acenaphthene	0.9	2.5	1.2	2.0	0.8
2-methylnapthalene	0.4	0.9	0.4	0.6	0.3
acenaphthylene	0.5	0.6	0.4	0.3	0.3
Total PAHs	134	240	165	135	83
Other Semi-Volatiles (ug/kg)					
2-methylphenol		1.1		0.2	
4-methylphenol	0.3				
diethylphthalate	0.4	0.3	0.6	0.1	0.2
di-n-butylphthalate	0.5	1.0	1.9	0.5	1.0
butylbenzylphthalate	0.7	0.7	0.8	1.5	0.3
bis(2-ethylhexyl)phthalate	40	30	48	17	13
Volatiles (ug/kg)					
dichlorodifluoromethane	370	1500	1000	270	740
dichloromethane	170	430	320	150	81
1,2,4-trimethylbenzene	34		83		
toluene		41			120
p-isopoplytoluene		93			

Notes:

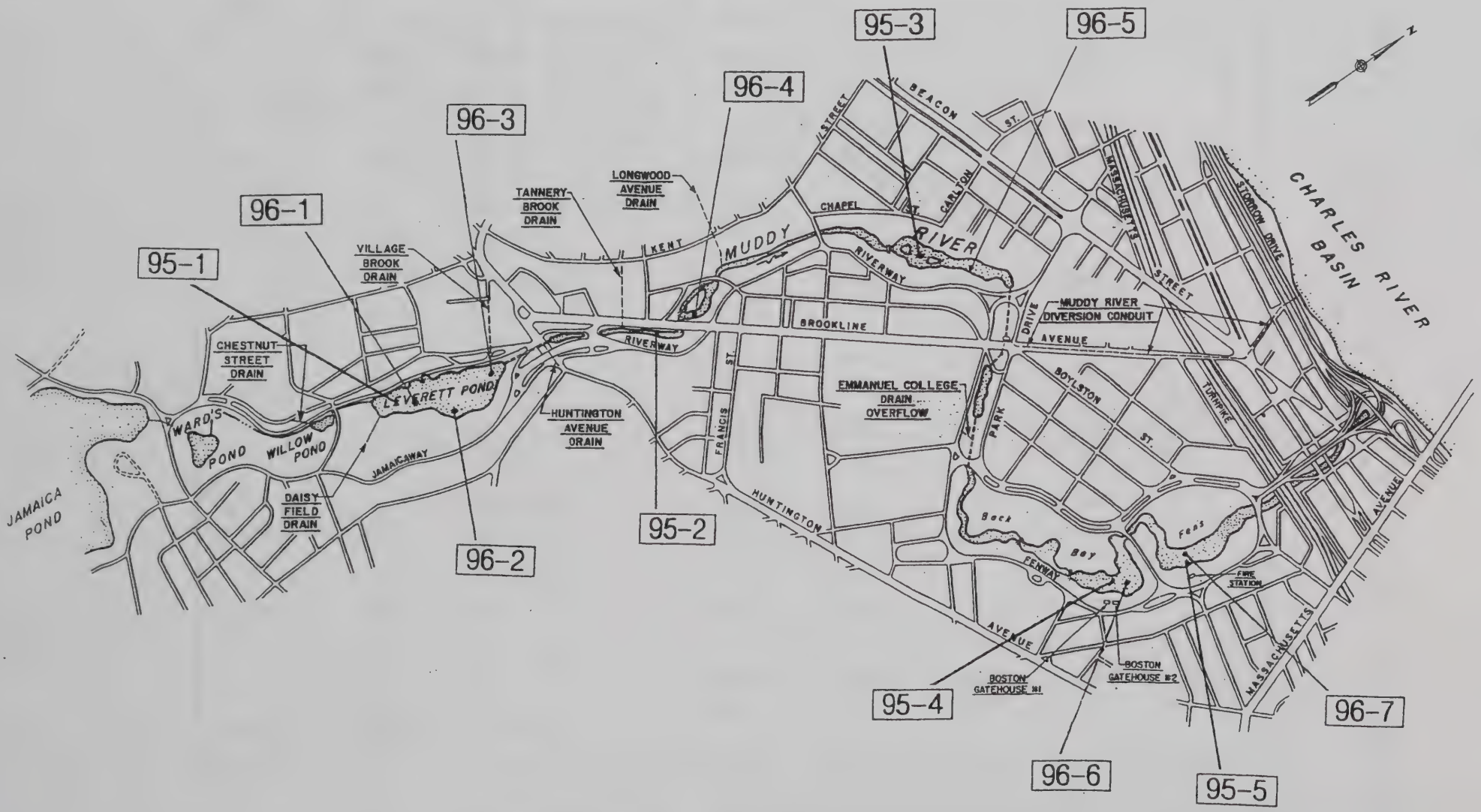
1. See Figure C-1 for sample locations.
2. All values presented on a dry weight basis.

Table C-8: Results of 1996 Corps Muddy River Sediment Tests

Sample	Depth of Core	Section	TPH (mg/kg)	PCBs (mg/kg)	Cyanide (mg/kg)	Lead (mg/kg)	TCLP Lead (mg/L)
96-1	42"	Top 16"	16000	0.37	< 0.5	880	-
		Bottom 16"	7200	0.40	< 0.5	910	-
96-2	48"	Top 24"	24000	0.97	< 0.5	1000	3.1
		Bottom 24"	6100	0.20	< 0.4	340	-
96-3	50"	Top 25"	790	0.03	< 0.3	680	-
		Bottom 25"	2600	0.27	< 0.3	220	-
96-4	40"	Top 20"	2700	0.05	0.4	82	-
		Bottom 20"	6400	0.27	< 0.3	260	-
96-5	48"	Top 24"	37000	1.1	3.4	1500	2.7
		Bottom 24"	2400	0.18	< 0.5	320	-
96-6	60"	Top 24"	38000	8.1	5.7	2000	5.4
		Bottom 24"	22000	1.3	< 0.5	1600	4.1
96-7	60"	Top 20"	36000	9.1	2	1800	6.0
		Bottom 33"	61	1.2	0.8	300	-
	Mean	Top	22070	2.8	1.4	1140	-
	Mean	Bottom	6680	0.5	< 0.4	560	-

Notes:

1. Samples collected on 12 April 1996
2. Samples 96-4 and 96-7 taken from within *Phragmites*



1995 and 1996 Sampling Locations

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

MUDDY RIVER
DETAILED VICINITY MAP

Table C-9: Results of 1997 U.S. Geological Survey Sediment Tests.

Parameter	Sample Location					
	Leverett Pond (n=2)		Riverway (n=5)		Back Bay Fens (n=8)	
	mean	range	mean	range	mean	range
Total Organic Carbon (%)	9.0	8.6 - 9.3	7.6	7.0 - 10.5	10.4	3.9 - 13.0
TPH (mg/kg)	24000	21000 - 27000	18000	9800 - 30000	28000	4700 - 34000
Metals (mg/kg)						
Mercury	1.3	1.2 - 1.4	2.5	1 - 6	3.1	1.4 - 6.3
Lead	788	657 - 919	631	210 - 1100	1140	156 - 1410
Cadmium	2.2	<2.7 - 3.0	3.0	<2.6 - 6.0	8.3	<2.8 - 14.8
Chromium	82	41 - 122	64	23 - 112	121	27 - 344
Copper	222	203 - 240	246	116 - 448	456	86 - 710
Nickel	29	-	32	18 - 43	45	16 - 71
Zinc	551	527 - 574	487	225 - 879	821	220 - 1070
Total PAHs (mg/kg)	255	189 - 321	153	61 - 342	138	58 - 270
Total PCBs (mg/kg)	0.21	0.15 - 0.27	0.29	<0.06 - 0.69	2.20	0.06 - 3.39
Selected Pesticides (ug/kg)						
Chlordane (alpha+gamma)	472	265 - 680	112	12 - 216	114	7 - 184
4,4'-DDE	195	160 - 230	130	11 - 260	192	150 - 380
4,4'-DDD	1785	370 - 3200	841	26 - 2000	580	46 - 1300
4,4'-DDT	74	38 - 110	29	13 - 50	63	<20 - 340
TCLP - Lead (mg/L)	1.3	1.1 - 1.4	1.2	0.28 - 2.2	1.6	0.70 - 2.9

Notes:

1. All data given on dry weight basis.
2. PCB value is sum of Aroclors 1242, 1254, and 1260; Other aroclors below method detection limit.
3. If concentration in a sample was below method detection limit, mean was calculated using one-half the detection limit as the value.

RLI Resource Laboratories, Inc.

124 Heritage Avenue Unit 10
Portsmouth, NH 03801

Voice: 603-436-2001
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Karen Leavitt
Gemini Geotechnical Associates, Inc.
1 Cate Street
Portsmouth, NH 03801

PO Number: 96011MA
Lab No: 8919
Date Received: 10/07/98
Date Reported: 10/22/98

Project:DWP

Attached please find results for analyses performed on samples received on 10/07/98.

Samples were received in acceptable condition and under chain of custody.

Instruments used in analysis were calibrated with the appropriate frequency and to the specifications of the referenced methods.

Analytes in blanks were below levels effecting sample results.

Matrix effects as monitored by matrix spike recovery or unusual physical properties were not apparent.

Accuracy and precision as monitored by laboratory control sample analyses were within acceptance limits.

RESOURCE LABORATORIES

Authorized Signature

Date 10/22/98

SAMPLE INFORMATION

Laboratory ID:	8919-01
Cleint ID:	SED-OUT
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/08/98
Date Analyzed:	10/13/98
Matrix:	Solid
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3550A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		670	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other	pyrene	U	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		2200	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		2600	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		670	20	ug/g
Aliphatic Surrogate % Recovery		100		
Aromatic Surrogate % Recovery		83		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		78		
Fractionation Surrogate % Recovery		50		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-02
Cleint ID:	RIM-MID (R)
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/08/98
Date Analyzed:	10/13/98
Matrix:	Solid
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3550A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		62	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	4.9	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	5.1	2	ug/g
Other	pyrene	4.3	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	2.0	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		U	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		U	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		45	20	ug/g
Aliphatic Surrogate % Recovery		100		
Aromatic Surrogate % Recovery		58		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		64		
Fractionation Surrogate % Recovery		33		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-03
Cleint ID:	RIM-MID (L)
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/08/98
Date Analyzed:	10/13/98
Matrix:	Solid
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3550A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor: 1

RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		U	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other	pyrene	U	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		460	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		390	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		U	20	ug/g
Aliphatic Surrogate % Recovery		108		
Aromatic Surrogate % Recovery		83		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		82		
Fractionation Surrogate % Recovery		42		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-04
Cleint ID:	SED-MID
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/08/98
Date Analyzed:	10/13/98
Matrix:	Solid
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3550A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		U	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other	pyrene	U	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		340	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		450	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		U	20	ug/g
Aliphatic Surrogate % Recovery		50		
Aromatic Surrogate % Recovery		42		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		64		
Fractionation Surrogate % Recovery		83		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-05
Cleint ID:	RIM-IN
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/08/98
Date Analyzed:	10/13/98
Matrix:	Solid
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3550A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		20	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	2.8	2	ug/g
Other	pyrene	2.1	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		400	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		380	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		15	20	ug/g
Aliphatic Surrogate % Recovery		88		
Aromatic Surrogate % Recovery		58		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		73		
Fractionation Surrogate % Recovery		75		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-06
Cleint ID:	SED-IN
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/08/98
Date Analyzed:	10/13/98
Matrix:	Solid
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3550A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		U	20	ug/g
Diesel PAH Analytes	naphthalene	U	2	ug/g
	2-methylnaphthalene	U	2	ug/g
	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other Target PAH Analytes	pyrene	U	2	ug/g
	benzo(a)anthracene	U	2	ug/g
	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		40	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		20	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		U	20	ug/g
Aliphatic Surrogate % Recovery		112		
Aromatic Surrogate % Recovery		67		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		73		
Fractionation Surrogate % Recovery		83		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-07
Cleint ID:	SW-OUT
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/14/98
Date Analyzed:	10/15/98
Matrix:	Water
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3510A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		U	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other	pyrene	U	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		U	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		U	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		U	20	ug/g
Aliphatic Surrogate % Recovery		96		
Aromatic Surrogate % Recovery		67		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		82		
Fractionation Surrogate % Recovery		92		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-08
Cleint ID:	SW-MID
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/14/98
Date Analyzed:	10/15/98
Matrix:	Water
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3510A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		U	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other	pyrene	U	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		U	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		U	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		U	20	ug/g
Aliphatic Surrogate % Recovery		88		
Aromatic Surrogate % Recovery		67		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		73		
Fractionation Surrogate % Recovery		67		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

SAMPLE INFORMATION

Laboratory ID:	8919-09
Cleint ID:	SW-IN
Date Collected:	10/07/98
Date Received:	10/07/98
Date Extracted:	10/14/98
Date Analyzed:	10/15/98
Matrix:	Water
Containers:	Satisfactory
Sample Preservation:	cold
Temperature:	Received on Ice
Extaction Method:	SW-846-3510A

EPH ANALYTICAL RESULTS

Method for Ranges: MADEP EPH 98-1

Method for Target Analytes: EPA 8270C

EPA Surrogate Standards

Aliphatic: 1-chlorooctadecane

Aromatic: o-terphenyl

EPH Fractionation Surrogates

2-fluorobiphenyl

2-bromonaphthalene

Dilution Factor:		1		
RANGE/TARGET ANALYTE		Result	RL	Units
Unadjusted C11-C22 Aromatics (1)		U	20	ug/g
	naphthalene	U	2	ug/g
Diesel PAH	2-methylnaphthalene	U	2	ug/g
Analytes	acenaphthylene	U	2	ug/g
	acenaphthene	U	2	ug/g
	fluorene	U	2	ug/g
	phenanthrene	U	2	ug/g
	anthracene	U	2	ug/g
	fluoranthene	U	2	ug/g
Other	pyrene	U	2	ug/g
Target PAH	benzo(a)anthracene	U	2	ug/g
Analytes	chrysene	U	2	ug/g
	benzo(b)fluoranthene	U	2	ug/g
	benzo(k)fluoranthene	U	2	ug/g
	benzo(a)pyrene	U	2	ug/g
	indeno(1,2,3-cd)pyrene	U	2	ug/g
	dibenzo(a,h)anthracene	U	2	ug/g
	benzo(g,h,i)perylene	U	2	ug/g
C9-C18 Aliphatic Hydrocarbons (1)		U	20	ug/g
C19-C36 AliphaticHydrocarbons (1)		U	20	ug/g
C11-C22 Aromatic Hydrocarbons (1,2)		U	20	ug/g
Aliphatic Surrogate % Recovery		69		
Aromatic Surrogate % Recovery		42		
Sample Surrogate Acceptance Range		40-140%		
Fractionation Surrogate % Recovery		55		
Fractionation Surrogate % Recovery		33		
Fractionation Surrogate Acceptance Range		40-140%		

1 Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.

2 C11-C22 Aromatic Hydrocarbons exclude the concentration of target PAH Analytes.

U = Below quantitation limit

RLI
Research Laboratories, Inc.
124 Heritage Avenue
Portsmouth, NH 03801

Voice: 603-436-2001
FAX: 603-430-2100

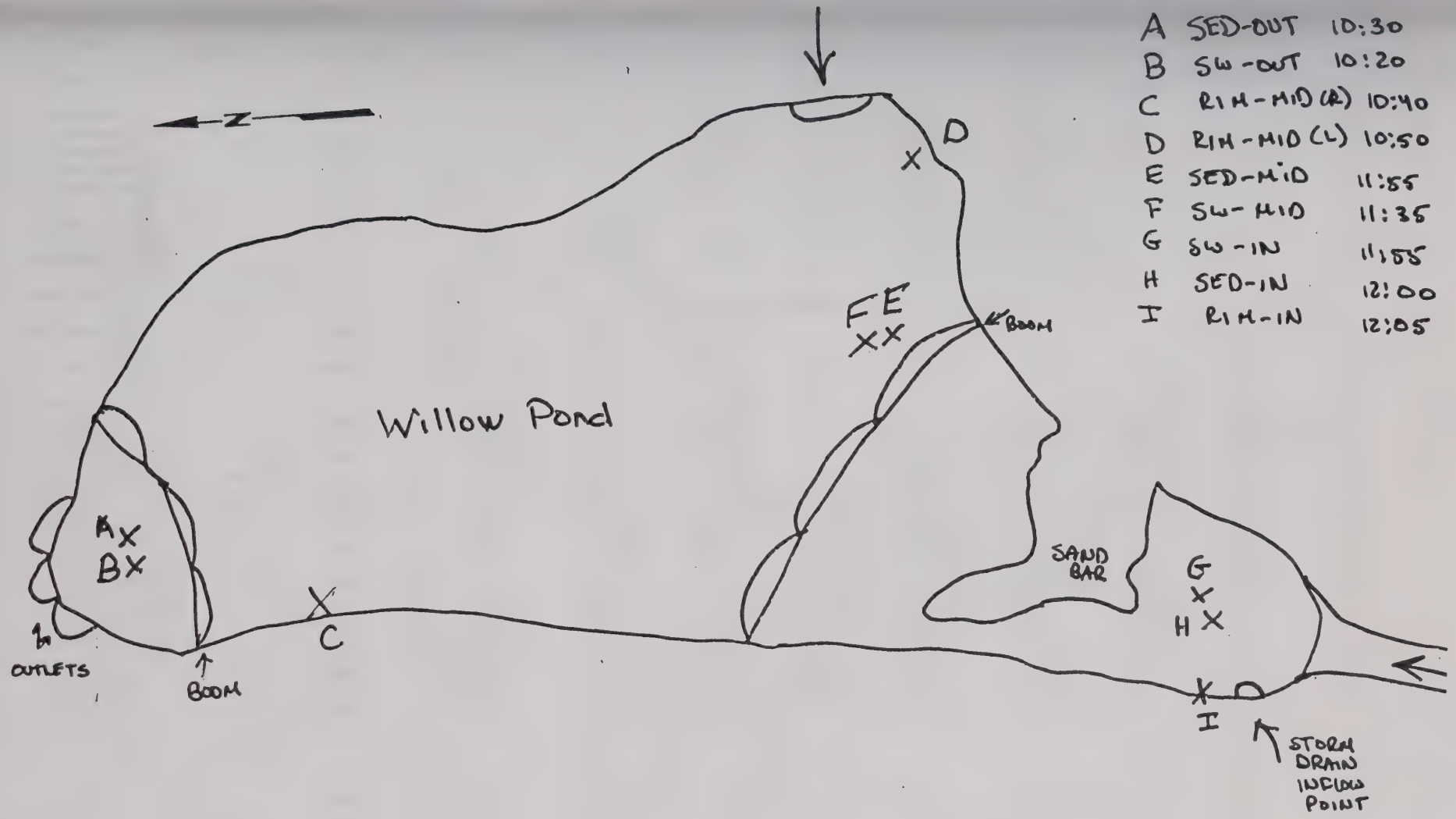
CHAIN OF CUSTODY DOCUMENTATION

Client: Gemini Geotechnical	Contact: K. Leavitt	Project Name: DPW	PAGE 1 OF 1
Report To: Karen Leavitt	Address: 1 Cate St., Portsmouth NH 03801		Phone/FAX: (603) 427-0141 / 0147
Invoice To: L. Saltamartino	Address:		P.O.# 96011MA Quote #

PROTOCAL: ___RCRA ___SDWA ___NPDES ✓ OTHER: MA MCP

Lab Number: (assigned by laboratory)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab/ composite(G/C)	Container Size (mL)	Container Type (P/G/T)	Field Preservation	Matrix S=Soil W=Water	Analyses Requested: Special Instructions:
8919-01	SED-OUT	10-7-98	10:30	KDL	G	2 oz.	G		S	EPH
-02	RIM-MID (R)	↓	10:40	↓	↓	↓	↓		↓	↓
-03	RIM-MID (L)	↓	10:50	↓	↓	↓	↓		↓	↓
-04	SED-MID	↓	11:55	↓	↓	↓	↓		↓	↓
-05	RIM-IN	↓	12:00	↓	↓	↓	↓		↓	↓
-06	SED-IN	↓	12:00	↓	↓	↓	↓		↓	↓
-07	SW-OUT	↓	10:20	↓	↓	1 l	↓	HCl	W	↓
-08	SW-MID	↓	11:35	↓	↓	↓	↓	↓	↓	↓
-09	SW-IN	↓	11:55	↓	↓	↓	↓	↓	↓	↓

Relinquished By: Karen Leavitt	Date: 10/7/98	Time: 14:25	Received By: [signature]	Date: 10/7/98	Time: 14:25
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:



SAMPLE LOCATION PLAN
WILLOW POND
BROOKLINE, MASSACHUSETTS

GEMINI GEOTECHNICAL ASSOCIATES, INC.
1 CATE STREET
PORTSMOUTH, NEW HAMPSHIRE 03801

DRAWN BY: KDL	SCALE: NTS	PROJ. NO.: 96011MA
CHECKED : FSV	DATE: 10/14/98	FIGURE: 1

Muddy River 2000 Sediment Testing

ANALYTE	SAMPLE LOCATION									
	Willow 00-1 (0 - 0.5')	Willow 00-1 (0.5-3.54')	Willow 00-2 (0 - 0.5')	Willow 00-2 (0.5 - 4.55')	Wards 00-1 (0 - 0.5')	Wards 00-1 (0.5 - 2.3')	Wards 00-2 (0 - 0.6')	Wards 00-2 (0.6 - 2.0')	Wards 00-3 (0 - 0.6')	Wards 00-3 (0.6 - 2.58')
INORGANICS (mg/kg)										
Arsenic	16.1	24.5	13.5	25.8	30.3	13.7	30.1	20.5	15.7	28.5
Cadmium	3.18	2.29	1.55	2.43	1.15	0.3	1.35	0.29	2.31	0.74
Chromium	86.6	60.0	60.2	69.8	34.1	26.0	37.5	24.0	31.6	33.9
Copper	236	158	126	178	62.3	28	74.6	42.5	66.5	56.1
Lead	573	602	522	606	307	63	491	198	529	278
Nickel	40.4	34.9	26.8	36.0	23.3	14.7	26.3	13.0	32.7	19.4
Mercury	0.78	0.66	0.43	1.18	0.54	0.19	0.86	0.44	0.5	0.58
Zinc	483	359	304	426	225	63	395	133	310	299
TCLP Lead (mg/l)	0.1	1.1	0.1	0.5	0.1	n.d.	0.3	n.d.	0.2	0.1
PAHs (ug/kg)										
Acenaphthene	894	1232	596	3608	43	n.d.	210	16	47	80
Acenaphthylene	353	597	170	1685	177	n.d.	1103	477	121	294
Anthracene	1836	3567	1315	9660	343	56	2433	1406	221	527
Benzo(a)anthracene	4825	8294	3731	23519	1358	144	5576	3109	714	1556
Benzo(a) pyrene	5395	8225	4053	23353	1653	168	6630	3118	882	1978
Benzo (b)fluroanthene	6129	7679	4436	22362	1753	177	6299	2803	1009	2162
Benzo(k)fluroanthene	5454	7511	3816	20529	1579	178	6345	2799	935	2203
Benzo (g,h,i)perylene	4601	5871	3179	16325	1406	152	5203	2154	843	1826
Chrysene	7117	10151	5030	28425	1798	203	7847	4204	1050	2480
Dibenz(a,h)anthracene	985	1365	752	3260	320	29	1194	478	184	429
Fluoranthene	13129	20652	9764	62154	2610	365	11909	7092	1595	3199
Fluorene	1559	1900	841	5395	89	n.d.	553	345	86	127
Indeno(1,2,3-cd)pyrene	4822	6407	3366	18247	1462	143	5550	2283	857	1956
2-methylnapthalene	3417	1075	962	2878	74	n.d.	181	75	48	53
Napthalene	364	492	293	1068	92	n.d.	297	10	74	103
Perylene	1433	2166	1063	5235	472	4077	1539	1687	285	591
Phenanthrene	9360	14235	6802	44766	886	111	3873	2869	689	1113
Pyrene	11652	18971	8482	56922	2715	363	12278	7256	1500	3230
Total PAHs (ug/kg)	83325	120390	58651	349391	18830	6166	79020	42181	11140	23907
TPH (mg/kg)	49590	53260	57010	33880	2868	3359	4626	4049	2410	2902
PCBs (ug/kg)	210	342	71	287	23	2	47	n.d.	40	7
PESTICIDES (ug/kg)										
DDD	577	831	286	816	18	n.d.	22	6	27	6
DDE	269	88	124	122	26	n.d.	38	n.d.	63	4.8
DDT	44	88	260	128	n.d.	n.d.	n.d.	n.d	2	n.d.
Gamma Chlordane	56	27	26	22	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Apha Chlordane	53	30	28	33	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Endosulfan I	17	25	12	24	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Methoxychlor	56	27	38	32	n.d.	n.d.	n.d.	n.d	n.d	n.d.
Heptachlor	5	n.d	4	n.d.	n.d.	n.d.	n.d.	n.d	n.d	n.d.
TOC (%)	15.1	10.3	13.3	11.2	7.8	21.6	8.7	20.2	10.7	6.4
Silt & Clay (%)	93	83	90	93	86	85	99	99	78	82

Harding Lawson Associates
Engineering and Environmental Services
107 Aububon Road
Building II, #301
Wakefield, MA 01880
781-245-6606

SEDIMENT SAMPLE LOCATIONS
WARD POND AND WILLOW POND
OLMSTEAD PARK
BROOKLINE, MA

FIGURE 1

DRAWN FILE DATE REVISED

ATTACHMENT F-4

CDM'S FIELD INVESTIGATION PROGRAM SUMMARY ANALYTICAL TABLES

Muddy River Restoration Project
Sediment Sampling Schedule and Analytical Parameters

Station	0- 2 feet	1- 3 feet	2- 4 feet	4- 6 feet	6- 8 feet	8- 10 feet	10- 12 feet	12- 14 feet	Area	Date Submitted to Lab	Laboratory	EPH/VPH	RCRA 8 Metals	PCBs	Pesticides	Reactivity	Corrosivity	Conductance	Sieve and Hydrometer	$N\text{-}NO_3$	Total Phosphate	Paint Filter Test
BBF-PF-01									Back Bay Fens	07/19/00	AMRO											X
BBF-PF-02									Back Bay Fens	07/21/00	AMRO											X
BBF-PF-03									Back Bay Fens	07/25/00	AMRO											X
BBF-PF-04									Back Bay Fens	07/28/00	AMRO											X
BBF-PF-05									Back Bay Fens	08/01/00	AMRO											X
BBF-PF-06									Back Bay Fens	09/06/00	AMRO											X
BBF-PF-07									Back Bay Fens	09/07/00	AMRO											X
BBF-PF-10									Back Bay Fens	08/14/00	AMRO											X
BBF-SED-01	X								Back Bay Fens	10/19/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-02	X								Back Bay Fens	07/19/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-02					X				Back Bay Fens	07/19/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-02						X			Back Bay Fens	07/19/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-03	X								Back Bay Fens	07/19/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-03			X						Back Bay Fens	07/19/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-04	X								Back Bay Fens	07/20/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-04			X						Back Bay Fens	07/20/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-04					X				Back Bay Fens	07/20/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-05	X								Back Bay Fens	07/21/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-05			X						Back Bay Fens	07/21/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-05						X			Back Bay Fens	07/21/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-06	X								Back Bay Fens	07/25/00	AMRO	X	X									
BBF-SED-06				X					Back Bay Fens	07/25/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-06					X				Back Bay Fens	07/25/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-07	X								Back Bay Fens	09/07/00	AMRO	X	X	X	X	X	X	X		X	X	
BBF-SED-07			X						Back Bay Fens	09/07/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-07					X				Back Bay Fens	09/07/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-08	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X		X	X	
BBF-SED-08			X						Back Bay Fens	09/06/00	AMRO	X	X									
BBF-SED-09	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-09			X						Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-10	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-10			X						Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-11	X								Back Bay Fens	07/26/00	AMRO	X	X									
BBF-SED-11				X					Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-11						X			Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-12	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-12			X						Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-12					X				Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-13	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-13			X						Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-13				X					Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-14	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-14			X						Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-15	X								Back Bay Fens	07/26/00	AMRO	X	X									
BBF-SED-15				X					Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-15					X				Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-16	X								Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-16			X						Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-16				X					Back Bay Fens	09/06/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-17	X								Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-17			X						Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-17					X				Back Bay Fens	07/26/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-18									Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-18									Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-18									Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-19	X								Back Bay Fens	08/15/00	AMRO	X	X	X	X	X	X	X		X	X	
BBF-SED-19				X					Back Bay Fens	08/15/00	AMRO	X	X	X	X	X	X	X		X	X	
BBF-SED-19						X			Back Bay Fens	08/15/00	AMRO	X	X									
BBF-SED-20	X								Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-20				X					Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-21	X								Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-21DUP	X								Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-21A			X						Back Bay Fens	08/14/00	AMRO	X	X									
BBF-SED-21A					X				Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-22	X								Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-22			X						Back Bay Fens	08/14/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-23	X								Back Bay Fens	08/15/00	AMRO	X	X	X	X	X	X	X		X	X	
BBF-SED-23			X						Back Bay Fens	08/15/00	AMRO	X	X	X	X	X	X	X		X	X	
BBF-SED-23								X	Back Bay Fens	08/15/00	AMRO	X	X	X	X	X	X	X		X	X	

Muddy River Restoration Project
Sediment Sampling Schedule and Analytical Parameters

Station	0- 2 feet	1- 3 feet	2- 4 feet	4- 6 feet	6- 8 feet	8- 10 feet	10- 12 feet	12- 14 feet	Area	Date Submitted to Lab	Laboratory	EPH/VPH	RCRA 8 Metals	PCBs	Pesticides	Reactivity	Corrosivity	Conductance	Sieve and Hydrometer	N-NO_3	Total Phosphate	Paint Filter Test
BBF-SED-24	X								Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-24				X					Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-24					X				Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-24DUP					X				Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-25	X								Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-25			X						Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-25					X				Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-26	X								Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-26				X					Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-26								X	Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-27	X								Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-27				X					Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-27					X				Back Bay Fens	08/11/00	AMRO	X	X	X	X	X	X	X	X	X	X	
BBF-SED-28	X								Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-28			X						Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-28							X		Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-29	X								Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-29				X					Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-29					X				Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-30	X								Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-30			X						Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-31	X								Back Bay Fens	07/28/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-31				X					Back Bay Fens	07/28/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-31							X		Back Bay Fens	07/28/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-32	X								Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-32				X					Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-32						X			Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-33	X								Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-33			X						Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-33					X				Back Bay Fens	07/27/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-34	X								Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-34				X					Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-34					X				Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-35	X								Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-35				X					Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-35						X			Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-36	X								Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-36				X					Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-36					X				Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-37	X								Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-37			X						Back Bay Fens	07/28/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-37					X				Back Bay Fens	07/28/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-38	X								Back Bay Fens	08/07/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-38					X				Back Bay Fens	08/08/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-39	X								Back Bay Fens	08/08/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-39				X					Back Bay Fens	08/09/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-39					X				Back Bay Fens	08/10/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-40	X								Back Bay Fens	07/31/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-40			X						Back Bay Fens	07/31/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-40					X				Back Bay Fens	07/31/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-41	X								Back Bay Fens	08/04/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-41				X					Back Bay Fens	08/04/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-41					X				Back Bay Fens	08/04/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-42	X								Back Bay Fens	07/31/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-42			X						Back Bay Fens	07/31/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-42				X					Back Bay Fens	07/31/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-43	X								Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-43				X					Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-43					X				Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-44	X								Back Bay Fens	08/04/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-44				X					Back Bay Fens	08/04/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-44					X				Back Bay Fens	08/04/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-45	X								Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-45				X					Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-45					X				Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-46	X								Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-46				X					Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-46					X				Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-47	X								Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			

Muddy River Restoration Project
Sediment Sampling Schedule and Analytical Parameters

Station	0- 2 feet	1- 3 feet	2- 4 feet	4- 6 feet	6- 8 feet	8- 10 feet	10- 12 feet	12- 14 feet	Area	Date Submitted to Lab	Laboratory	EPH/VPH	RCRA 8 Metals	PCBs	Pesticides	Reactivity	Corrosivity	Conductance	Sieve and Hydrometer	N-NO_3	Total Phosphate	Paint Filter Test
BBF-SED-47				X					Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-47					X				Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-48	X								Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-48				X					Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-48					X				Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-49	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-49				X					Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-49					X				Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-50	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-50				X					Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-50					X				Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-51	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-51			X						Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-51				X					Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-52	X								Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-52				X					Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-52					X				Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-53	X								Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-53				X					Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-53					X				Back Bay Fens	08/03/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-54	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-54					X				Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-54						X			Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-55	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-55					X				Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-55						X			Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-56	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-56			X						Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-57	X								Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-57				X					Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-57						X			Back Bay Fens	08/02/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-58	X								Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-58			X						Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-58					X				Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-58							X		Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-58DUP							X		Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-59	X								Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-59				X					Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-59						X			Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-60	X								Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X				
BBF-SED-60			X						Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
BBF-SED-60						X			Back Bay Fens	08/01/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-1		X							Charles Gate	07/25/00	AMRO	X	X									
CG-SED-1			X						Charles Gate	07/25/00	AMRO	X	X									
CG-SED-1				X					Charles Gate	07/25/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-2	X								Charles Gate	07/25/00	AMRO	X	X	X	X	X	X	X				
CG-SED-2			X						Charles Gate	07/25/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-2					X				Charles Gate	07/25/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-3	X								Charles Gate	07/27/00	AMRO	X	X									
CG-SED-3				X					Charles Gate	07/27/00	AMRO	X	X	X	X	X	X	X				
CG-SED-3						X			Charles Gate	07/27/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-4	X								Charles Gate	07/28/00	AMRO	X	X									
CG-SED-4			X						Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X				
CG-SED-4						X			Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-5	X								Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-5			X						Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-6	X								Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X	X			
CG-SED-6				X					Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X				
CG-SED-6					X				Charles Gate	07/28/00	AMRO	X	X	X	X	X	X	X	X			
LP-PF-02									Leverett Pond	08/18/00	AMRO	X										
LP-SED-01	X								Leverett Pond	08/17/00	AMRO	X	X	X	X	X	X	X		X	X	
LP-SED-01				X					Leverett Pond	08/17/00	AMRO	X	X	X	X	X	X	X		X	X	
LP-SED-01					X				Leverett Pond	08/17/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-02	X								Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-02			X						Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-03	X								Leverett Pond	08/18/00	AMRO	X	X									
LP-SED-03			X						Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-04	X								Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-04			X						Leverett Pond	08/17/00	AMRO	X	X									

Muddy River Restoration Project
Sediment Sampling Schedule and Analytical Parameters

Station	0- 2 feet	1- 3 feet	2- 4 feet	4- 6 feet	6- 8 feet	8- 10 feet	10- 12 feet	12- 14 feet	Area	Date Submitted to Lab	Laboratory	EPH/VPH	RCRA 8 Metals	PCBs	Pesticides	Reactivity	Corrosivity	Conductance	Sieve and Hydrometer	N-NO_3	Total Phosphate	Paint Filter Test
LP-SED-05	X								Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-05			X						Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-06	X								Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-06			X						Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-07	X								Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-07				X					Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-08	X								Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-08			X						Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-08DUP	X								Leverett Pond	08/17/00	AMRO	X	X									
LP-SED-09	X								Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-09			X						Leverett Pond	08/18/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-10	X								Leverett Pond	08/07/00	AMRO	X	X									
LP-SED-10					X				Leverett Pond	08/07/00	AMRO	X	X									
LP-SED-10						X			Leverett Pond	08/07/00	AMRO	X	X									
LP-SED-11	X								Leverett Pond	08/22/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-11			X						Leverett Pond	08/22/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-11				X					Leverett Pond	08/22/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-12	X								Leverett Pond	08/18/00	AMRO	X	X									
LP-SED-12			X						Leverett Pond	08/18/00	AMRO	X	X									
LP-SED-12					X				Leverett Pond	08/18/00	AMRO	X	X									
LP-SED-13	X								Leverett Pond	08/23/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-13			X						Leverett Pond	08/23/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-13					X				Leverett Pond	08/23/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-14	X								Leverett Pond	08/18/00	AMRO	X	X									
LP-SED-14				X					Leverett Pond	08/18/00	AMRO	X	X									
LP-SED-15	X								Leverett Pond	08/22/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-15			X						Leverett Pond	08/22/00	AMRO	X	X	X	X	X	X	X		X	X	
LP-SED-16	X								Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-16				X					Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-16					X				Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-17	X								Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-17			X						Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-17						X			Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-18	X								Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-18				X					Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-19	X								Leverett Pond	08/07/00	AMRO	X	X	X	X	X	X	X	X			
LP-SED-19					X				Leverett Pond	08/07/00	AMRO	X	X	X	X	X	X	X	X			
LP-SED-19						X			Leverett Pond	08/07/00	AMRO	X	X	X	X	X	X	X	X			
LP-SED-20	X								Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-20			X						Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-20				X					Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-20DUP			X						Leverett Pond	08/23/00	AMRO	X	X									
LP-SED-21	X								Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-21				X					Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-21					X				Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-22	X								Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-22			X						Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-22					X				Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-23	X								Leverett Pond	08/23/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-23					X				Leverett Pond	08/23/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-23								X	Leverett Pond	08/23/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-24	X								Leverett Pond	08/21/00	AMRO	X	X									
LP-SED-24				X					Leverett Pond	08/21/00	AMRO	X	X									
LP-SED-24								X	Leverett Pond	08/21/00	AMRO	X	X									
LP-SED-24DUP	X								Leverett Pond	08/21/00	AMRO	X	X									
LP-SED-25	X								Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X		X	X	
LP-SED-25				X					Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-25								X	Leverett Pond	08/21/00	AMRO	X	X	X	X	X	X	X	X	X	X	
LP-SED-26	X								Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-26				X					Leverett Pond	08/22/00	AMRO	X	X									
LP-SED-26								X	Leverett Pond	08/22/00	AMRO	X	X									
RW-PF-01									Riverway	08/10/00	Toxikon											X
RW-PF-02									Riverway	08/17/00	Toxikon											X
RW-SED-PF-3									Riverway	08/18/00	Toxikon											X
RW-PF-03									Riverway	08/30/00	Toxikon											X
RW-SED-01	X								Riverway	08/16/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-01				X					Riverway	08/16/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-01					X				Riverway	08/16/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-02			X						Riverway	08/16/00	Toxikon	X	X							X	X	

Muddy River Restoration Project
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RW-SED-02				X					Riverway	08/16/00	Toxikon	X	X							X	X	
RW-SED-02						X			Riverway	08/16/00	Toxikon	X	X							X	X	
RW-SED-03	X								Riverway	08/17/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-03					X				Riverway	08/17/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-03							X		Riverway	08/17/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-04	X								Riverway	08/11/00	Toxikon	X	X									
RW-SED-04				X					Riverway	08/11/00	Toxikon	X	X									
RW-SED-04								X	Riverway	08/11/00	Toxikon	X	X									
RW-SED-05	X								Riverway	08/17/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-05				X					Riverway	08/17/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-05					X				Riverway	08/17/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-06	X								Riverway	08/17/00	Toxikon	X	X									
RW-SED-06				X					Riverway	08/17/00	Toxikon	X	X									
RW-SED-06						X			Riverway	08/17/00	Toxikon	X	X									
RW-SED-07	X								Riverway	08/18/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-07				X					Riverway	08/18/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-07					X				Riverway	08/18/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-08	X								Riverway	08/18/00	Toxikon	X	X									
RW-SED-08			X						Riverway	08/18/00	Toxikon	X	X									
RW-SED-08				X					Riverway	08/18/00	Toxikon	X	X									
RW-SED-09			X						Riverway	08/18/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-09					X				Riverway	08/18/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-09							X		Riverway	08/18/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-11	X								Riverway	10/20/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-12	X								Riverway	10/20/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-13	X								Riverway	10/20/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-16	X								Riverway	10/20/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-17	X								Riverway	10/20/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-18	X								Riverway	10/20/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-19	X								Riverway	09/01/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-19			X						Riverway	09/01/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-19				X					Riverway	09/01/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-20	X								Riverway	09/01/00	Toxikon	X	X									
RW-SED-20			X						Riverway	09/01/00	Toxikon	X	X									
RW-SED-21	X								Riverway	09/01/00	Toxikon	X	X	X	X	X	X	X		X	X	
RW-SED-21			X						Riverway	09/01/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-22	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-22			X						Riverway	08/30/00	Toxikon	X	X									
RW-SED-23	X								Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-23			X						Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-23					X				Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-24	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-24				X					Riverway	08/30/00	Toxikon	X	X									
RW-SED-24DUP				X					Riverway	08/30/00	Toxikon	X	X									
RW-SED-25	X								Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-25			X						Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-26	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-26			X						Riverway	08/30/00	Toxikon	X	X									
RW-SED-27	X								Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-27			X						Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-28	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-28			X						Riverway	08/30/00	Toxikon	X	X									
RW-SED-28				X					Riverway	08/30/00	Toxikon	X	X									
RW-SED-28DUP			X						Riverway	08/30/00	Toxikon	X	X									
RW-SED-29	X								Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-29			X						Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-30	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-30			X						Riverway	08/30/00	Toxikon	X	X									
RW-SED-30					X				Riverway	08/30/00	Toxikon	X	X									
RW-SED-31	X								Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-31			X						Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-31				X					Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-32	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-32			X						Riverway	08/30/00	Toxikon	X	X									
RW-SED-32DUP	X								Riverway	08/30/00	Toxikon	X	X									
RW-SED-33	X								Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-33			X						Riverway	08/30/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-34	X								Riverway	08/29/00	Toxikon	X	X									
RW-SED-34			X						Riverway	08/29/00	Toxikon	X	X									

Muddy River Restoration Project
Sediment Sampling Schedule and Analytical Parameters

Station	0- 2 feet	1- 3 feet	2- 4 feet	4- 6 feet	6- 8 feet	8- 10 feet	10- 12 feet	12- 14 feet	Area	Date Submitted to Lab	Laboratory	EPH/VPH	RCRA 8 Metals	PCBs	Pesticides	Reactivity	Corrosivity	Conductance	Sieve and Hydrometer	N-NO_3	Total Phosphate	Paint Filter Test
RW-SED-35	X								Riverway	08/29/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-35				X					Riverway	08/29/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-36	X								Riverway	08/29/00	Toxikon	X	X									
RW-SED-36			X						Riverway	08/29/00	Toxikon	X	X									
RW-SED-37	X								Riverway	08/29/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-37			X						Riverway	08/29/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-38	X								Riverway	08/29/00	Toxikon	X	X									
RW-SED-38			X						Riverway	08/29/00	Toxikon	X	X									
RW-SED-38				X					Riverway	08/29/00	Toxikon	X	X									
RW-SED-39	X								Riverway	08/25/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
RW-SED-39				X					Riverway	08/25/00	Toxikon	X	X	X	X	X	X	X	X	X	X	
WD-PF-1									Wards Pond	08/03/00	AMRO											X
WD-SED-1	X								Wards Pond	08/08/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-1			X						Wards Pond	08/08/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-1					X				Wards Pond	08/08/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-2	X								Wards Pond	08/04/00	AMRO	X	X									
WD-SED-2					X				Wards Pond	08/04/00	AMRO	X	X									
WD-SED-2						X			Wards Pond	08/04/00	AMRO	X	X									
WD-SED-3	X								Wards Pond	10/19/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-4	X								Wards Pond	08/04/00	AMRO	X	X									
WD-SED-4					X				Wards Pond	08/04/00	AMRO	X	X									
WD-SED-5	X								Wards Pond	08/03/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-5				X					Wards Pond	08/03/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-5					X				Wards Pond	08/03/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-6	X								Wards Pond	08/03/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-6				X					Wards Pond	08/03/00	AMRO	X	X	X	X	X	X	X	X			
WD-SED-6					X				Wards Pond	08/03/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-1	X								Willow Pond	08/09/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-1				X					Willow Pond	08/09/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-1					X				Willow Pond	08/09/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-1							X		Willow Pond	08/09/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-2	X								Willow Pond	10/19/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-3	X								Willow Pond	10/19/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-4	X								Willow Pond	10/19/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-5	X								Willow Pond	08/09/00	AMRO	X	X									
WL-SED-5				X					Willow Pond	08/09/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-5					X				Willow Pond	08/09/00	AMRO	X	X	X	X	X	X	X	X			
WL-SED-PF									Willow Pond	08/09/00	AMRO											X

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
CG-SED-1	1-3	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-1	2-4	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-1	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	0-2	7/25/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	4-6	7/25/00	ND	ND	0.75	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	8-10	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	0-2	7/27/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	8-10	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	0-2	7/28/00	ND	3.2	8.3	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	2-4	7/28/00	ND	ND	0.72	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	8-10	7/28/00	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	ND	2.0	6.2	ND	ND	ND	ND	ND	ND	1.0
CG-SED-6	2-4	7/28/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	8-10	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
CG-SED-1	1-3	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-1	2-4	7/25/00	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-1	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	0-2	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	8-10	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	0-2	7/27/00	ND	88	ND	ND	ND	ND	ND	ND	ND	0.39	ND	ND	0.36	ND
CG-SED-3	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	ND	ND	0.41	ND
CG-SED-3	8-10	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	0-2	7/28/00	ND	130	ND	ND	ND	ND	ND	0.59	0.57	0.79	ND	ND	0.61	ND
CG-SED-4	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	8-10	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	2-4	7/28/00	ND	ND	ND	ND	0.65	ND	2.4	2.1	1.8	2.1	0.57	0.92	1.9	ND
CG-SED-6	8-10	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
CG-SED-1	1-3	7/25/00	ND	ND	ND	ND	ND	ND
CG-SED-1	2-4	7/25/00	ND	ND	ND	ND	ND	ND
CG-SED-1	4-6	7/25/00	ND	ND	ND	ND	ND	ND
CG-SED-2	0-2	7/25/00	ND	ND	ND	ND	ND	ND
CG-SED-2	4-6	7/25/00	ND	ND	ND	ND	ND	ND
CG-SED-2	8-10	7/25/00	ND	ND	ND	ND	ND	ND
CG-SED-3	0-2	7/27/00	0.84	ND	ND	ND	0.38	0.7
CG-SED-3	6-8	7/27/00	0.72	ND	ND	ND	ND	0.68
CG-SED-3	8-10	7/27/00	ND	ND	ND	ND	ND	ND
CG-SED-4	0-2	7/28/00	1.5	ND	ND	ND	0.8	1.2
CG-SED-4	2-4	7/28/00	ND	ND	ND	ND	ND	ND
CG-SED-4	8-10	7/28/00	ND	ND	ND	ND	ND	ND
CG-SED-5	0-2	7/28/00	ND	ND	ND	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	0.43	ND	ND	ND	0.36	0.41
CG-SED-6	2-4	7/28/00	5.3	0.79	0.73	ND	5.3	4.2
CG-SED-6	8-10	7/28/00	0.73	ND	ND	ND	0.51	0.64

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
CG-SED-1	1-3	7/25/00	---	---	---	---	---	---	---
CG-SED-1	2-4	7/25/00	---	---	---	---	---	---	---
CG-SED-1	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	0-2	7/25/00	ND	ND	ND	ND	ND	0.088	0.035
CG-SED-2	4-6	7/25/00	ND	ND	ND	ND	ND	0.047	ND
CG-SED-2	8-10	7/25/00	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	0-2	7/27/00	---	---	---	---	---	---	---
CG-SED-3	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	8-10	7/27/00	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	0-2	7/28/00	---	---	---	---	---	---	---
CG-SED-4	2-4	7/28/00	ND	ND	ND	ND	ND	0.23	0.095
CG-SED-4	8-10	7/28/00	ND	ND	ND	ND	ND	0.043	ND
CG-SED-5	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	ND	ND	ND	ND	ND	0.044	ND
CG-SED-6	2-4	7/28/00	ND	ND	ND	ND	ND	0.1	0.044
CG-SED-6	8-10	7/28/00	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4´-DDD	4,4´-DDE	4,4´-DDT	Aldrin	alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin
CG-SED-1	1-3	7/25/00	---	---	---	---	---	---	---	---	---	---	---	---	---
CG-SED-1	2-4	7/25/00	---	---	---	---	---	---	---	---	---	---	---	---	---
CG-SED-1	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	0-2	7/25/00	0.026	0.015	0.0095	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	4-6	7/25/00	0.016	0.012	0.0049	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	8-10	7/25/00	0.0082	0.0024	ND	ND	0.0011	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	0-2	7/27/00	---	---	---	---	---	---	---	---	---	---	---	---	---
CG-SED-3	6-8	7/27/00	0.0098	0.0025	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	8-10	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	0-2	7/28/00	---	---	---	---	---	---	---	---	---	---	---	---	---
CG-SED-4	2-4	7/28/00	0.033	0.027	ND	ND	ND	ND	ND	ND	0.014	ND	ND	ND	ND
CG-SED-4	8-10	7/28/00	0.0032	0.0055	ND	ND	ND	ND	ND	ND	0.0045	ND	ND	ND	ND
CG-SED-5	0-2	7/28/00	ND	0.0061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	0.0092	0.0049	ND	ND	ND	ND	ND	ND	0.004	ND	ND	ND	ND
CG-SED-6	2-4	7/28/00	0.033	0.012	ND	ND	0.0061	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	8-10	7/28/00	0.012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
CG-SED-1	1-3	7/25/00	---	---	---	---	---	---	---	---	---
CG-SED-1	2-4	7/25/00	---	---	---	---	---	---	---	---	---
CG-SED-1	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	0-2	7/25/00	ND	ND	ND	0.0021	ND	ND	ND	ND	ND
CG-SED-2	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-2	8-10	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	0-2	7/27/00	---	---	---	---	---	---	---	---	---
CG-SED-3	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-3	8-10	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	0-2	7/28/00	---	---	---	---	---	---	---	---	---
CG-SED-4	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-4	8-10	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	2-4	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
CG-SED-6	8-10	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
CHARLES GATE
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Arsenic	Barium	Cadmium	Chromium	TCLP Lead (mg/L)	Lead	Mercury	Selenium	Silver
CG-SED-1	1-3	7/25/00	ND	ND	ND	15	---	7.1	0.051	ND	ND
CG-SED-1	2-4	7/25/00	ND	ND	ND	12	---	9.6	0.032	ND	ND
CG-SED-1	4-6	7/25/00	ND	71	ND	36	---	10	ND	ND	ND
CG-SED-2	0-2	7/25/00	ND	ND	ND	7.8	---	74	0.13	ND	ND
CG-SED-2	4-6	7/25/00	ND	ND	ND	9.4	---	27	0.21	ND	ND
CG-SED-2	8-10	7/25/00	ND	ND	ND	11	ND	200	0.071	ND	ND
CG-SED-3	0-2	7/27/00	ND	ND	ND	68	---	ND	0.098	ND	ND
CG-SED-3	6-8	7/27/00	ND	ND	ND	20	2.1	250	0.18	ND	ND
CG-SED-3	8-10	7/27/00	ND	ND	ND	9.9	---	7.3	ND	ND	ND
CG-SED-4	0-2	7/28/00	ND	51	ND	31	0.45	130	0.48	ND	ND
CG-SED-4	2-4	7/28/00	ND	ND	ND	8.1	---	26	0.049	ND	ND
CG-SED-4	8-10	7/28/00	ND	ND	0.93	13	---	21	0.16	ND	ND
CG-SED-5	0-2	7/28/00	ND	ND	ND	22	---	13	ND	ND	ND
CG-SED-5	2-4	7/28/00	ND	ND	ND	23	---	ND	ND	ND	ND
CG-SED-6	0-2	7/28/00	ND	ND	ND	5.7	---	41	ND	ND	ND
CG-SED-6	2-4	7/28/00	ND	ND	ND	18	0.97	140	ND	ND	ND
CG-SED-6	8-10	7/28/00	ND	ND	ND	17	---	72	0.28	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
BBF-SED-01	0-2	10/18/00	ND	3.0	5.1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	0-2	7/19/00	3.1	1.3	2.0	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	6-8	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	8-10	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	0-2	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	2-4	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	0-2	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	2-4	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	6-8	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	0-2	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	2-4	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	8-10	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	0-2	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	6-8	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	0-2	9/7/00	ND	ND	7.0	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	2-4	9/7/00	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	6-8	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	0-2	9/6/00	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-09	0-2	9/6/00	ND	ND	5.9	ND	ND	ND	ND	ND	ND	ND
BBF-SED-09	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	0-2	9/6/00	ND	ND	2.9	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	2-4	9/6/00	3.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	0-2	7/26/00	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	8-10	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	0-2	9/6/00	ND	ND	14	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	2-4	9/6/00	ND	ND	4.1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	6-8	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	0-2	9/6/00	ND	ND	9.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	2-4	9/6/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
BBF-SED-13	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	0-2	9/6/00	ND	ND	3.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	2-4	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	4-6	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	0-2	9/6/00	ND	ND	6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	2-4	9/6/00	ND	ND	6.6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	0-2	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	2-4	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.3
BBF-SED-17	6-8	7/26/00	ND	4.5	ND	ND	ND	ND	ND	ND	0.082	32
BBF-SED-18	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	4-6	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	0-2	8/15/00	ND	ND	1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	4-6	8/15/00	ND	ND	0.88	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	8-10	8/15/00	ND	ND	0.66	ND	ND	ND	ND	ND	ND	ND
BBF-SED-20	0-2	8/14/00	ND	ND	3	ND	ND	ND	ND	ND	ND	ND
BBF-SED-20	4-6	8/14/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21	0-2*	8/14/00	12.85	ND	4.1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21A	2-4	8/14/00	19	ND	4	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21A	6-8	8/14/00	14	ND	3.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	0-2	8/14/00	12	ND	2.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	2-4	8/14/00	23	ND	3.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	0-2	8/15/00	ND	ND	8.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	2-4	8/15/00	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	12-14	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	0-2	8/11/00	ND	ND	6.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	4-6	8/11/00	ND	ND	3.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	6-8*	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	0-2	8/11/00	7.2	14	13	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
BBF-SED-25	2-4	8/11/00	8.6	20	21	ND	ND	0.21	ND	ND	ND	ND
BBF-SED-25	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	0-2	8/11/00	6.2	6.8	10	ND	ND	0.31	ND	ND	ND	ND
BBF-SED-26	4-6	8/11/00	ND	ND	2.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	12-14	8/11/00	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	0-2	8/11/00	14	18	21	ND	ND	0.3	ND	ND	ND	ND
BBF-SED-27	4-6	8/11/00	10	24	22	ND	ND	0.21	ND	ND	ND	ND
BBF-SED-27	6-8	8/11/00	ND	ND	3	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	0-2	8/9/00	5.6	1.3	6.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	2-4	8/9/00	5.6	1	8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	10-12	8/9/00	4	ND	1.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	0-2	8/9/00	6.5	ND	3.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	4-6	8/9/00	5.8	ND	2.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	6-8	8/9/00	6.7	ND	1.3	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	0-2	7/28/00	ND	ND	3.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	4-6	7/28/00	4.5	5.5	9.8	ND	ND	0.083	ND	ND	ND	ND
BBF-SED-31	10-12	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	0-2	8/9/00	5.2	9.7	6.6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	4-6	8/9/00	5.6	6.5	4.8	ND	ND	0.28	ND	ND	ND	ND
BBF-SED-32	8-10	8/9/00	6.3	ND	2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-33	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-33	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-33	6-8	7/27/00	ND	ND	2.9	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	0-2	8/8/00	9.2	22	20	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	4-6	8/8/00	7	11	12	ND	ND	0.22	ND	ND	ND	ND
BBF-SED-34	6-8	8/8/00	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	0-2	8/8/00	9.2	20	19	ND	ND	0.48	ND	ND	ND	ND
BBF-SED-35	4-6	8/8/00	5.4	ND	5.1	ND	ND	0.28	ND	ND	ND	ND
BBF-SED-35	8-10	8/8/00	3.7	ND	2.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	0-2	8/8/00	ND	2.2	11	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
BBF-SED-36	4-6	8/8/00	—	—	—	—	—	—	—	—	—	—
BBF-SED-36	6-8	8/8/00	ND	ND	1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	0-2	7/28/00	ND	ND	3.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	4-6	7/28/00	ND	4.8	7.1	ND	ND	0.33	ND	ND	ND	ND
BBF-SED-37	6-8	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	0-2	8/7/00	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	6-8	8/7/00	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	0-2	8/7/00	ND	23	22	ND	ND	0.28	ND	ND	ND	ND
BBF-SED-39	4-6	8/7/00	ND	9.2	8.3	ND	ND	0.29	ND	ND	ND	ND
BBF-SED-39	8-10	8/7/00	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	0-2	7/31/00	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	2-4	7/31/00	3.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	6-8	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	0-2	8/4/00	ND	ND	2.9	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	4-6	8/4/00	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	6-8	8/4/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	0-2	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	2-4	7/31/00	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	4-6	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	0-2	8/1/00	ND	ND	2.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	4-6	8/1/00	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	6-8	8/1/00	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	0-2	8/4/00	ND	ND	4.1	ND	ND	0.12	ND	ND	ND	ND
BBF-SED-44	4-6	8/4/00	ND	ND	2.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	6-8	8/4/00	ND	ND	2.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	0-2	8/1/00	ND	6	12	ND	ND	0.23	ND	ND	ND	ND
BBF-SED-45	4-6	8/1/00	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	6-8	8/1/00	ND	ND	3.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	0-2	8/3/00	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	0-2	8/3/00	ND	15	18	ND	ND	0.51	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
BBF-SED-47	4-6	8/3/00	ND	ND	3.9	ND	ND	0.16	ND	ND	ND	ND
BBF-SED-47	6-8	8/3/00	ND	ND	2.6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	0-2	8/1/00	ND	ND	6.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	2-4	8/1/00	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	0-2	8/2/00	ND	36	44	ND	ND	0.51	ND	ND	ND	ND
BBF-SED-49	4-6	8/2/00	ND	3.6	7	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	6-8	8/2/00	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	0-2	8/2/00	ND	4.9	5.1	ND	ND	0.28	ND	ND	ND	ND
BBF-SED-50	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	0-2	8/2/00	ND	5.1	10	ND	ND	0.18	ND	ND	ND	ND
BBF-SED-51	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	0-2	8/3/00	ND	4.8	7.7	ND	ND	0.27	ND	ND	ND	ND
BBF-SED-52	4-6	8/3/00	ND	ND	4.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	0-2	8/3/00	6.8	10	13	ND	ND	0.42	ND	ND	ND	ND
BBF-SED-53	4-6	8/3/00	ND	ND	0.9	ND	ND	0.21	ND	ND	ND	ND
BBF-SED-53	6-8	8/3/00	ND	ND	0.8	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	0-2	8/2/00	8.8	18	18	ND	ND	0.68	ND	ND	ND	ND
BBF-SED-54	6-8	8/2/00	7.5	20	19	ND	ND	0.38	ND	ND	ND	ND
BBF-SED-54	8-10	8/2/00	ND	ND	2.6	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	0-2	8/2/00	7.4	11	17	ND	ND	0.16	ND	ND	ND	ND
BBF-SED-55	6-8	8/2/00	8.1	9.4	17	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	0-2	8/2/00	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	2-4	8/2/00	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	0-2	8/2/00	ND	1.8	8	ND	ND	0.18	ND	ND	ND	ND
BBF-SED-57	4-6	8/2/00	ND	7.2	9.7	ND	ND	0.22	ND	ND	ND	ND
BBF-SED-57	8-10	8/2/00	2.9	ND	2.1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	0-2	8/1/00	ND	23	19	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
BBF-SED-58	2-4	8/1/00	ND	20	26	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	6-8	8/1/00	ND	ND	0.73	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	10-12*	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	0-2	8/1/00	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	4-6	8/1/00	ND	ND	2.2	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	0-2	8/1/00	ND	3.2	9.5	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	2-4	8/1/00	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
BBF-SED-01	0-2	10/18/00	ND	330	ND	ND	ND	ND	ND	1.9	2.2	3.2	1.3	1.1	2.3	ND
BBF-SED-02	0-2	7/19/00	64	ND	ND	ND	0.56	ND	1.3	2.5	2.0	2.7	1.2	1.2	2.4	ND
BBF-SED-02	6-8	7/19/00	ND	ND	ND	ND	ND	ND	0.36	0.5	0.49	0.59	ND	ND	0.58	ND
BBF-SED-02	8-10	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	0-2	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	2-4	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	0-2	7/20/00	ND	180	ND	ND	ND	ND	ND	0.82	0.86	1.7	0.33	0.53	0.97	ND
BBF-SED-04	2-4	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	6-8	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	0-2	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	2-4	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	8-10	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	0-2	7/25/00	ND	570	ND	ND	ND	ND	ND	0.6	0.58	0.8	ND	0.38	0.56	ND
BBF-SED-06	4-6	7/25/00	ND	230	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND
BBF-SED-06	6-8	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	0-2	9/7/00	ND	430	ND	ND	ND	ND	1.6	3.7	3.5	4.6	2.2	1.7	3.4	ND
BBF-SED-07	2-4	9/7/00	ND	610	ND	ND	ND	ND	0.92	2.5	2.9	3.9	1.8	1.5	2.9	ND
BBF-SED-07	6-8	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	0-2	9/6/00	ND	250	ND	ND	ND	ND	0.51	1.8	2.5	3.6	1.5	1	1.9	ND
BBF-SED-08	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-09	0-2	9/6/00	ND	590	ND	ND	ND	ND	1	3.8	4.2	6.3	2.9	2.1	3.9	ND
BBF-SED-09	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	0-2	9/6/00	ND	310	ND	ND	ND	ND	ND	1.3	1.7	2.3	1.2	0.88	1.6	ND
BBF-SED-10	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	0-2	7/26/00	ND	ND	ND	ND	ND	ND	ND	0.46	0.44	0.47	0.34	ND	0.6	ND
BBF-SED-11	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	8-10	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND
BBF-SED-12	0-2	9/6/00	ND	1200	ND	ND	ND	ND	ND	3.1	2.9	4.1	2.5	1.9	2.5	ND
BBF-SED-12	2-4	9/6/00	220	1000	ND	ND	ND	ND	1.3	4.2	5.5	6.8	3	3	5	0.86
BBF-SED-12	6-8	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	0-2	9/6/00	ND	670	ND	ND	ND	ND	ND	1.6	1.7	2.4	1.2	0.82	1.7	ND
BBF-SED-13	2-4	9/6/00	ND	230	ND	ND	ND	ND	ND	1.4	1.3	1.9	0.91	0.79	1.3	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
BBF-SED-13	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	0-2	9/6/00	ND	180	ND	ND	ND	ND	ND	ND	ND	0.82	ND	ND	ND	ND
BBF-SED-14	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	2-4	7/26/00	ND	ND	ND	ND	ND	ND	0.45	0.72	0.65	0.68	0.4	ND	0.7	ND
BBF-SED-15	4-6	7/26/00	ND	ND	ND	ND	ND	ND	1.2	1.6	1.2	1.6	0.67	0.64	1.4	ND
BBF-SED-15	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	0-2	9/6/00	ND	400	ND	ND	ND	ND	ND	0.79	0.87	1.1	ND	ND	ND	ND
BBF-SED-16	2-4	9/6/00	ND	830	ND	ND	ND	ND	ND	2.7	2.6	4.1	1.7	1.3	2.4	ND
BBF-SED-16	4-6	9/6/00	ND	130	ND	ND	ND	ND	ND	1	0.96	1.3	0.65	0.51	0.7	ND
BBF-SED-17	0-2	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	2-4	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32	ND
BBF-SED-17	6-8	7/26/00	2100	ND	ND	30	36	21	97	89	73	92	30	8.7	69	12
BBF-SED-18	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	4-6	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	0-2	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	4-6	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	8-10	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-20	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-20	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21	0-2*	8/14/00	ND	120	ND	ND	ND	ND	ND	0.385	0.38	0.83	0.335	ND	0.715	ND
BBF-SED-21A	2-4	8/14/00	ND	100	ND	ND	0.58	ND	1.1	1.4	1.4	2.2	0.87	0.53	1.4	ND
BBF-SED-21A	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	2-4	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	0-2	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	12-14	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	0-2	8/11/00	150	250	ND	ND	ND	ND	ND	ND	ND	0.91	ND	ND	0.77	ND
BBF-SED-24	4-6	8/11/00	ND	230	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	0.73	ND
BBF-SED-24	6-8*	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
BBF-SED-25	2-4	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	0-2	8/11/00	100	200	ND	ND	ND	ND	3.7	3.9	2.5	3.4	1.1	1.3	3.6	ND
BBF-SED-26	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	12-14	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	0-2	8/9/00	65	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	2-4	8/9/00	ND	ND	ND	ND	ND	ND	0.59	ND	ND	ND	ND	0.43	ND	ND
BBF-SED-28	10-12	8/9/00	ND	ND	ND	ND	ND	ND	0.3	0.39	0.29	0.49	ND	ND	0.41	ND
BBF-SED-29	0-2	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	0-2	7/28/00	270	490	64	0.38	1.7	0.32	4.9	11	9.7	14	5.3	3.3	8.9	1.7
BBF-SED-31	4-6	7/28/00	230	650	190	0.5	0.78	ND	1.9	4.3	4.1	5.9	1.9	2.1	4	0.51
BBF-SED-31	10-12	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	0-2	8/9/00	160	380	180	0.5	0.83	ND	1.5	1.2	1	1.8	0.69	0.59	1.2	ND
BBF-SED-32	4-6	8/9/00	160	300	200	0.5	0.83	ND	1.7	1.2	0.88	1.7	0.41	0.66	1.3	ND
BBF-SED-32	8-10	8/9/00	88	140	ND	ND	ND	ND	0.67	0.41	ND	0.57	ND	ND	0.45	ND
BBF-SED-33	0-2	7/27/00	ND	150	ND	ND	ND	ND	ND	0.42	0.38	0.56	ND	ND	0.4	ND
BBF-SED-33	2-4	7/27/00	ND	120	ND	ND	ND	ND	ND	0.33	ND	0.4	ND	ND	0.33	ND
BBF-SED-33	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	0-2	8/8/00	410	920	130	ND	0.81	ND	2	6.2	6.7	9.7	2.2	2.9	7.5	0.72
BBF-SED-34	4-6	8/8/00	280	590	130	ND	0.7	ND	1.5	3.7	3.8	4.7	1.2	2	4.6	ND
BBF-SED-34	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	0-2	8/8/00	340	1200	320	ND	ND	ND	1.1	2.5	2.6	4.1	0.93	1.3	2.9	ND
BBF-SED-35	4-6	8/8/00	ND	190	ND	ND	ND	ND	ND	0.85	0.82	1.1	ND	ND	0.96	ND
BBF-SED-35	8-10	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	0-2	8/8/00	ND	160	ND	ND	ND	ND	0.63	2.1	2	2.2	0.83	0.99	2.2	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
BBF-SED-36	4-6	8/8/00	110	260	ND	ND	ND	ND	1.3	2.6	2.7	3.5	0.94	1.2	2.9	ND
BBF-SED-36	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	0-2	7/28/00	190	460	ND	ND	1.1	ND	2.3	5.5	5.6	7.9	2	2.6	5.5	0.57
BBF-SED-37	4-6	7/28/00	410	1200	210	0.73	1.1	0.9	3.7	14	11	17	3.7	4.7	13	1.2
BBF-SED-37	6-8	7/28/00	ND	70	ND	ND	ND	ND	ND	0.39	0.39	0.79	ND	0.72	0.4	ND
BBF-SED-38	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	0-2	8/7/00	ND	540	170	ND	ND	ND	ND	1	0.98	1.3	0.7	0.56	1.3	ND
BBF-SED-39	4-6	8/7/00	120	360	ND	ND	ND	ND	0.78	1.5	1.7	2.1	1.3	0.87	1.5	ND
BBF-SED-39	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	0-2	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	2-4	7/31/00	ND	76	ND	ND	ND	ND	ND	0.36	0.39	0.52	0.3	ND	0.46	ND
BBF-SED-40	6-8	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND	0.3	0.32	0.48	0.32	ND	0.4	ND
BBF-SED-41	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	0-2	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	ND	ND	ND	ND
BBF-SED-42	2-4	7/31/00	ND	99	ND	ND	ND	ND	ND	ND	ND	0.4	ND	ND	ND	ND
BBF-SED-42	4-6	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	0-2	8/1/00	ND	220	ND	ND	1	ND	2.2	2.4	2.1	2.6	1.3	1.1	2.3	ND
BBF-SED-43	4-6	8/1/00	ND	100	ND	ND	ND	ND	ND	0.64	0.6	0.7	0.42	ND	0.67	ND
BBF-SED-43	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	0-2	8/1/00	150	930	230	ND	0.63	ND	1.7	4.7	4.6	6.2	2.8	2.3	4.5	0.82
BBF-SED-45	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	0.46	0.42	0.48	ND	ND	0.41	ND
BBF-SED-45	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	0.51	ND	0.47	ND	ND	0.48	ND
BBF-SED-46	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	0-2	8/3/00	ND	220	ND	ND	ND	ND	ND	ND	0.84	0.82	ND	ND	0.83	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
BBF-SED-47	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	0-2	8/1/00	170	1000	180	ND	ND	ND	1.8	5.6	5.4	7.5	3	2.3	5.4	0.57
BBF-SED-48	2-4	8/1/00	ND	180	ND	ND	ND	ND	ND	0.87	0.86	1.1	0.52	0.51	0.87	ND
BBF-SED-48	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	0.74	0.64	ND	ND	0.65	ND
BBF-SED-49	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	6-8	8/2/00	130	540	180	ND	ND	ND	0.63	0.84	1.2	1.5	0.92	0.63	1.3	ND
BBF-SED-50	0-2	8/2/00	310	590	220	ND	1.2	ND	2.5	6.1	7.3	7.7	4.3	3.2	6.3	1.3
BBF-SED-50	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	0-2	8/2/00	100	430	160	ND	ND	ND	0.91	1.4	1.8	2	1.1	0.91	1.6	ND
BBF-SED-51	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	0-2	8/3/00	ND	ND	ND	ND	ND	ND	0.96	1.2	1.2	1.2	0.59	0.79	1.1	ND
BBF-SED-53	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	0-2	8/2/00	ND	560	260	ND	ND	ND	1.1	1.7	2	2.2	1.7	1.1	1.9	ND
BBF-SED-54	6-8	8/2/00	300	920	270	0.62	0.55	ND	1.7	4.3	5.7	6.5	3.2	2.4	4.5	0.62
BBF-SED-54	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	0-2	8/2/00	410	1100	420	0.55	0.69	ND	2.2	4.9	5.8	6.3	4	2.7	5.4	1
BBF-SED-55	6-8	8/2/00	220	660	220	ND	ND	ND	1.1	2.1	2.7	3	1.9	1.5	2.9	ND
BBF-SED-55	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	0-2	8/2/00	ND	160	ND	ND	ND	ND	0.8	1	1.2	1.3	0.9	0.64	1.4	ND
BBF-SED-56	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	0-2	8/2/00	290	640	120	ND	1.8	ND	4.8	7	7.9	9	5.2	3.6	8.3	1.5
BBF-SED-57	4-6	8/2/00	400	1300	460	ND	0.95	ND	2.7	4.7	5.4	5.9	4.1	2.7	5	0.97
BBF-SED-57	8-10	8/2/00	ND	80	ND	ND	ND	ND	0.39	0.52	0.52	0.55	0.38	0.31	0.47	ND
BBF-SED-58	0-2	8/1/00	440	1600	470	ND	ND	ND	1.3	3.7	3.7	5.1	1.5	2.2	3.7	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
BBF-SED-58	2-4	8/1/00	480	1600	450	ND	0.76	ND	2.3	4.7	4.8	7	2.2	2.4	4.9	0.62
BBF-SED-58	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	10-12*	8/1/00	ND	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	0-2	8/1/00	ND	110	ND	ND	0.42	ND	0.79	1.3	1.2	1.8	0.6	0.62	1.2	ND
BBF-SED-59	4-6	8/1/00	140	580	ND	ND	ND	ND	1.1	3.9	4.9	7	2.9	2.2	3.9	0.65
BBF-SED-59	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	0-2	8/1/00	180	560	ND	ND	0.7	ND	1.6	5.1	5.4	7.5	2.3	2.7	5.5	0.6
BBF-SED-60	2-4	8/1/00	ND	520	ND	ND	ND	ND	0.85	2.3	2.5	3.9	1.7	1.2	2.2	ND
BBF-SED-60	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
BBF-SED-01	0-2	10/18/00	4.3	ND	1.5	ND	1.3	3.9
BBF-SED-02	0-2	7/19/00	5.8	0.56	1.2	0.55	5.2	4.5
BBF-SED-02	6-8	7/19/00	1.3	ND	ND	ND	1	1
BBF-SED-02	8-10	7/19/00	0.43	ND	ND	ND	ND	0.37
BBF-SED-03	0-2	7/19/00	ND	ND	ND	ND	ND	ND
BBF-SED-03	2-4	7/19/00	ND	ND	ND	ND	ND	ND
BBF-SED-04	0-2	7/20/00	1.7	ND	0.46	ND	ND	1.5
BBF-SED-04	2-4	7/20/00	0.48	ND	ND	ND	ND	0.43
BBF-SED-04	6-8	7/20/00	ND	ND	ND	ND	ND	ND
BBF-SED-05	0-2	7/21/00	0.4	ND	ND	ND	ND	0.38
BBF-SED-05	2-4	7/21/00	ND	ND	ND	ND	ND	ND
BBF-SED-05	8-10	7/21/00	ND	ND	ND	ND	ND	ND
BBF-SED-06	0-2	7/25/00	1.4	ND	0.38	ND	1	1.2
BBF-SED-06	4-6	7/25/00	0.58	ND	ND	ND	0.36	0.52
BBF-SED-06	6-8	7/25/00	0.43	ND	ND	ND	0.43	ND
BBF-SED-07	0-2	9/7/00	8.0	ND	1.9	ND	6.1	7.1
BBF-SED-07	2-4	9/7/00	5.7	ND	1.7	ND	3.3	5.3
BBF-SED-07	6-8	9/7/00	ND	ND	ND	ND	ND	ND
BBF-SED-08	0-2	9/6/00	3.7	ND	1.6	ND	1.7	3.2
BBF-SED-08	2-4	9/6/00	ND	ND	ND	ND	ND	ND
BBF-SED-09	0-2	9/6/00	7.8	ND	2.6	ND	4	7.4
BBF-SED-09	2-4	9/6/00	ND	ND	ND	ND	ND	ND
BBF-SED-10	0-2	9/6/00	3.3	ND	0.88	ND	1.9	3.1
BBF-SED-10	2-4	9/6/00	ND	ND	ND	ND	ND	ND
BBF-SED-11	0-2	7/26/00	1.2	ND	ND	ND	1	1.5
BBF-SED-11	6-8	7/26/00	ND	ND	ND	ND	ND	ND
BBF-SED-11	8-10	7/26/00	0.63	ND	ND	ND	0.34	0.56
BBF-SED-12	0-2	9/6/00	5.6	ND	2	ND	2.9	5.4
BBF-SED-12	2-4	9/6/00	9	0.86	2.9	ND	5	8.6
BBF-SED-12	6-8	9/6/00	ND	ND	ND	ND	ND	ND
BBF-SED-13	0-2	9/6/00	3.3	ND	0.9	ND	1.8	3.5
BBF-SED-13	2-4	9/6/00	3	ND	0.73	ND	1.5	2.7

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
BBF-SED-13	4-6	9/6/00	ND	ND	ND	ND	ND	ND
BBF-SED-14	0-2	9/6/00	1.3	ND	ND	ND	ND	1.3
BBF-SED-14	2-4	9/6/00	0.68	ND	ND	ND	ND	0.68
BBF-SED-15	2-4	7/26/00	2	ND	0.39	ND	2.3	1.8
BBF-SED-15	4-6	7/26/00	4.3	ND	0.75	ND	4.1	3.4
BBF-SED-15	6-8	7/26/00	ND	ND	ND	ND	ND	ND
BBF-SED-16	0-2	9/6/00	1.6	ND	ND	ND	0.83	1.7
BBF-SED-16	2-4	9/6/00	5.4	ND	1.7	ND	2.3	5.3
BBF-SED-16	4-6	9/6/00	1.9	ND	0.56	ND	0.65	1.9
BBF-SED-17	0-2	7/26/00	ND	ND	ND	ND	ND	ND
BBF-SED-17	2-4	7/26/00	0.92	ND	ND	ND	1	0.74
BBF-SED-17	6-8	7/26/00	250	57	45	60	340	200
BBF-SED-18	0-2	7/27/00	ND	ND	ND	ND	ND	ND
BBF-SED-18	2-4	7/27/00	ND	ND	ND	ND	ND	ND
BBF-SED-18	4-6	7/27/00	ND	ND	ND	ND	ND	ND
BBF-SED-19	0-2	8/15/00	0.36	ND	ND	ND	ND	15
BBF-SED-19	4-6	8/15/00	ND	ND	ND	ND	ND	ND
BBF-SED-19	8-10	8/15/00	ND	ND	ND	ND	ND	ND
BBF-SED-20	0-2	8/14/00	0.82	ND	ND	ND	ND	ND
BBF-SED-20	4-6	8/14/00	ND	ND	ND	ND	ND	ND
BBF-SED-21	0-2*	8/14/00	1.6	ND	ND	ND	1.1	1.4
BBF-SED-21A	2-4	8/14/00	4	0.66	0.83	0.38	4	3.3
BBF-SED-21A	6-8	8/14/00	ND	ND	ND	ND	ND	ND
BBF-SED-22	0-2	8/14/00	ND	ND	ND	ND	ND	ND
BBF-SED-22	2-4	8/14/00	ND	ND	ND	ND	ND	ND
BBF-SED-23	0-2	8/15/00	0.68	ND	ND	ND	ND	ND
BBF-SED-23	2-4	8/15/00	ND	ND	ND	ND	ND	ND
BBF-SED-23	12-14	8/15/00	ND	ND	ND	ND	ND	ND
BBF-SED-24	0-2	8/11/00	4.5	ND	ND	ND	2.7	2.7
BBF-SED-24	4-6	8/11/00	5.2	ND	ND	ND	2.3	2.9
BBF-SED-24	6-8*	8/11/00	ND	ND	ND	ND	ND	ND
BBF-SED-25	0-2	8/11/00	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
BBF-SED-25	2-4	8/11/00	ND	ND	ND	ND	ND	ND
BBF-SED-25	6-8	8/11/00	ND	ND	ND	ND	ND	ND
BBF-SED-26	0-2	8/11/00	20	0.8	1.4	ND	8.8	16
BBF-SED-26	4-6	8/11/00	1.2	ND	ND	ND	0.7	0.88
BBF-SED-26	12-14	8/11/00	0.92	ND	ND	ND	0.65	0.82
BBF-SED-27	0-2	8/11/00	ND	ND	ND	ND	ND	ND
BBF-SED-27	4-6	8/11/00	ND	ND	ND	ND	ND	ND
BBF-SED-27	6-8	8/11/00	ND	ND	ND	ND	ND	ND
BBF-SED-28	0-2	8/9/00	1.2	ND	ND	ND	0.66	0.99
BBF-SED-28	2-4	8/9/00	2.5	ND	ND	ND	1.9	1.9
BBF-SED-28	10-12	8/9/00	1	ND	ND	ND	0.91	0.99
BBF-SED-29	0-2	8/9/00	0.87	ND	ND	ND	0.46	0.71
BBF-SED-29	4-6	8/9/00	1.1	ND	ND	ND	0.67	1.1
BBF-SED-29	6-8	8/9/00	ND	ND	ND	ND	ND	ND
BBF-SED-30	0-2	7/27/00	ND	ND	ND	ND	ND	ND
BBF-SED-30	2-4	7/27/00	ND	ND	ND	ND	ND	ND
BBF-SED-31	0-2	7/28/00	27	1.8	6.2	0.76	20	21
BBF-SED-31	4-6	7/28/00	10	0.73	2.2	ND	8.5	9.3
BBF-SED-31	10-12	7/28/00	ND	ND	ND	ND	ND	ND
BBF-SED-32	0-2	8/9/00	9.6	1.1	0.69	0.55	6.6	4.6
BBF-SED-32	4-6	8/9/00	14	1.1	0.56	0.4	9.2	7.6
BBF-SED-32	8-10	8/9/00	4.7	0.4	ND	ND	3.1	2.6
BBF-SED-33	0-2	7/27/00	1.1	ND	ND	ND	0.6	0.98
BBF-SED-33	2-4	7/27/00	0.74	ND	ND	ND	0.35	0.67
BBF-SED-33	6-8	7/27/00	ND	ND	ND	ND	ND	ND
BBF-SED-34	0-2	8/8/00	15	0.9	2.3	ND	13	14
BBF-SED-34	4-6	8/8/00	9.1	0.79	1.3	ND	7	8
BBF-SED-34	6-8	8/8/00	ND	ND	ND	ND	ND	ND
BBF-SED-35	0-2	8/8/00	6.2	ND	1.1	ND	4.1	5.6
BBF-SED-35	4-6	8/8/00	2	ND	ND	ND	1.3	2
BBF-SED-35	8-10	8/8/00	ND	ND	ND	ND	ND	ND
BBF-SED-36	0-2	8/8/00	4.6	ND	0.75	ND	3.5	4.2

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
BBF-SED-36	4-6	8/8/00	6.3	0.51	1.1	ND	4.6	5.4
BBF-SED-36	6-8	8/8/00	ND	ND	ND	ND	ND	ND
BBF-SED-37	0-2	7/28/00	14	0.92	2.5	ND	10	12
BBF-SED-37	4-6	7/28/00	28	1.3	4.6	0.95	13	26
BBF-SED-37	6-8	7/28/00	0.99	ND	ND	ND	0.52	0.86
BBF-SED-38	0-2	8/7/00	ND	ND	ND	ND	ND	ND
BBF-SED-38	6-8	8/7/00	ND	ND	ND	ND	ND	ND
BBF-SED-39	0-2	8/7/00	2.6	ND	0.7	ND	1.9	2.2
BBF-SED-39	4-6	8/7/00	3.8	ND	1	ND	2.4	3.3
BBF-SED-39	8-10	8/7/00	ND	ND	ND	ND	ND	ND
BBF-SED-40	0-2	7/31/00	ND	ND	ND	ND	ND	ND
BBF-SED-40	2-4	7/31/00	1	ND	ND	ND	0.66	0.88
BBF-SED-40	6-8	7/31/00	0.68	ND	ND	ND	0.39	0.58
BBF-SED-41	0-2	8/4/00	0.7	ND	0.3	ND	ND	0.64
BBF-SED-41	4-6	8/4/00	ND	ND	ND	ND	ND	ND
BBF-SED-41	6-8	8/4/00	ND	ND	ND	ND	ND	ND
BBF-SED-42	0-2	7/31/00	0.69	ND	ND	ND	ND	0.63
BBF-SED-42	2-4	7/31/00	0.59	ND	ND	ND	ND	0.57
BBF-SED-42	4-6	7/31/00	ND	ND	ND	ND	ND	ND
BBF-SED-43	0-2	8/1/00	6.3	0.99	1.3	0.92	6.4	5.6
BBF-SED-43	4-6	8/1/00	1.6	ND	ND	ND	0.94	1.5
BBF-SED-43	6-8	8/1/00	ND	ND	ND	ND	ND	ND
BBF-SED-44	0-2	8/4/00	0.67	ND	ND	ND	ND	0.62
BBF-SED-44	4-6	8/4/00	ND	ND	ND	ND	ND	ND
BBF-SED-44	6-8	8/4/00	ND	ND	ND	ND	ND	ND
BBF-SED-45	0-2	8/1/00	10	0.61	3.1	ND	5.4	9.8
BBF-SED-45	4-6	8/1/00	0.8	ND	ND	ND	ND	0.7
BBF-SED-45	6-8	8/1/00	0.83	ND	ND	ND	ND	0.75
BBF-SED-46	0-2	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-46	4-6	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-46	6-8	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-47	0-2	8/3/00	1.6	ND	ND	ND	1.2	1.5

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
BBF-SED-47	4-6	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-47	6-8	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-48	0-2	8/1/00	12	0.72	3.5	ND	7.1	12
BBF-SED-48	2-4	8/1/00	2	ND	0.61	ND	0.99	1.8
BBF-SED-48	4-6	8/1/00	ND	ND	ND	ND	ND	ND
BBF-SED-49	0-2	8/2/00	1.5	ND	ND	ND	0.67	1.4
BBF-SED-49	4-6	8/2/00	0.82	ND	ND	ND	ND	0.8
BBF-SED-49	6-8	8/2/00	2.7	ND	0.89	ND	1.3	2.4
BBF-SED-50	0-2	8/2/00	16	1	4.3	ND	7.8	14
BBF-SED-50	4-6	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-50	6-8	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-51	0-2	8/2/00	3.7	ND	1.2	ND	1.4	3.6
BBF-SED-51	2-4	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-51	4-6	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-52	0-2	8/3/00	0.59	ND	ND	ND	ND	0.57
BBF-SED-52	4-6	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-52	6-8	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-53	0-2	8/3/00	3.2	ND	0.66	ND	2.6	2.5
BBF-SED-53	4-6	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-53	6-8	8/3/00	ND	ND	ND	ND	ND	ND
BBF-SED-54	0-2	8/2/00	5	ND	1.4	ND	2.6	4.7
BBF-SED-54	6-8	8/2/00	11	0.71	3.4	0.58	4.1	9.6
BBF-SED-54	8-10	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-55	0-2	8/2/00	13	0.91	3.9	0.53	6.7	12
BBF-SED-55	6-8	8/2/00	6.2	ND	1.9	ND	2.8	5.8
BBF-SED-55	8-10	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-56	0-2	8/2/00	3	ND	0.84	ND	2.1	2.7
BBF-SED-56	2-4	8/2/00	ND	ND	ND	ND	ND	ND
BBF-SED-57	0-2	8/2/00	21	1.4	4.9	0.71	16	19
BBF-SED-57	4-6	8/2/00	12	0.97	3.6	ND	6.9	11
BBF-SED-57	8-10	8/2/00	1.4	ND	0.38	ND	0.94	1.2
BBF-SED-58	0-2	8/1/00	8.8	0.71	1.8	ND	5.6	7.7

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
BBF-SED-58	2-4	8/1/00	11	0.79	2.5	ND	7.1	10
BBF-SED-58	6-8	8/1/00	ND	ND	ND	ND	ND	ND
BBF-SED-58	10-12*	8/1/00	ND	ND	ND	ND	ND	ND
BBF-SED-59	0-2	8/1/00	4	ND	0.64	ND	3.8	3.1
BBF-SED-59	4-6	8/1/00	6.5	ND	3.3	ND	1.4	6.1
BBF-SED-59	8-10	8/1/00	ND	ND	ND	ND	ND	ND
BBF-SED-60	0-2	8/1/00	10	0.92	2.8	ND	6.8	9.9
BBF-SED-60	2-4	8/1/00	4.9	ND	1.8	ND	2	4.6
BBF-SED-60	8-10	8/1/00	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
BBF-SED-01	0-2	10/18/00	ND	ND	ND	ND	ND	ND	0.070
BBF-SED-02	0-2	7/19/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	6-8	7/19/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	8-10	7/19/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	0-2	7/19/00	---	---	---	---	---	---	---
BBF-SED-03	2-4	7/19/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	0-2	7/20/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	2-4	7/20/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	6-8	7/20/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	0-2	7/21/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	2-4	7/21/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	8-10	7/21/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	0-2	7/25/00	---	---	---	---	---	---	---
BBF-SED-06	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	6-8	7/25/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	0-2	9/7/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	2-4	9/7/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	6-8	9/7/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	2-4	9/6/00	---	---	---	---	---	---	---
BBF-SED-09	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-09	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	0-2	7/26/00	---	---	---	---	---	---	---
BBF-SED-11	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	8-10	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	6-8	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
BBF-SED-15	2-4	7/26/00	—	—	—	—	—	—	—
BBF-SED-15	4-6	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	0-2	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	2-4	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	4-6	7/27/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	0-2	8/15/00	ND	ND	ND	ND	ND	0.15	0.051
BBF-SED-19	4-6	8/15/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	8-10	8/15/00	—	—	—	—	—	—	—
BBF-SED-20	0-2	8/14/00	ND	ND	ND	ND	ND	2.1	0.74
BBF-SED-20	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21	0-2	8/14/00	ND	ND	ND	ND	ND	0.245	0.13
BBF-SED-21A	2-4	8/14/00	—	—	—	—	—	—	—
BBF-SED-21A	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	0-2	8/14/00	ND	ND	ND	ND	ND	0.099	ND
BBF-SED-22	2-4	8/14/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	0-2	8/15/00	ND	ND	ND	ND	ND	0.3	0.12
BBF-SED-23	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	12-14	8/15/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	0-2	8/11/00	ND	ND	ND	ND	ND	1.1	0.57
BBF-SED-24	4-6	8/11/00	ND	ND	ND	ND	ND	0.18	0.086
BBF-SED-24	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	0-2	8/11/00	ND	ND	ND	ND	ND	1.4	0.51
BBF-SED-25	2-4	8/11/00	ND	ND	ND	ND	ND	1.5	0.51
BBF-SED-25	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	12-14	8/11/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	0-2	8/11/00	ND	ND	ND	ND	ND	3.6	1.3

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
BBF-SED-27	4-6	8/11/00	ND	ND	ND	ND	ND	0.93	0.4
BBF-SED-27	6-8	8/11/00	ND	ND	ND	ND	ND	0.098	ND
BBF-SED-28	0-2	8/9/00	ND	ND	ND	ND	ND	0.14	0.067
BBF-SED-28	2-4	8/9/00	ND	ND	ND	ND	ND	0.11	0.053
BBF-SED-28	10-12	8/9/00	ND	ND	ND	ND	ND	0.042	ND
BBF-SED-29	0-2	8/9/00	ND	ND	ND	ND	ND	0.062	ND
BBF-SED-29	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	0-2	7/28/00	ND	ND	ND	ND	ND	0.16	0.077
BBF-SED-31	4-6	7/28/00	ND	ND	ND	ND	ND	3.7	1.3
BBF-SED-31	10-12	7/28/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	0-2	8/9/00	ND	ND	ND	ND	ND	0.65	0.33
BBF-SED-32	4-6	8/9/00	ND	ND	ND	ND	ND	4	ND
BBF-SED-32	8-10	8/9/00	ND	ND	ND	ND	ND	0.17	0.078
BBF-SED-33	0-2	7/27/00	ND	ND	ND	ND	ND	0.37	0.19
BBF-SED-33	2-4	7/27/00	ND	ND	ND	ND	ND	0.079	0.039
BBF-SED-33	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	0-2	8/8/00	ND	ND	ND	ND	ND	1.5	0.53
BBF-SED-34	4-6	8/8/00	ND	ND	ND	ND	0.6	0.35	0.2
BBF-SED-34	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	0-2	8/8/00	ND	ND	ND	ND	2.3	1.3	0.55
BBF-SED-35	4-6	8/8/00	ND	ND	ND	ND	ND	0.1	ND
BBF-SED-35	8-10	8/8/00	ND	ND	ND	ND	ND	0.042	ND
BBF-SED-36	0-2	8/8/00	ND	ND	ND	ND	ND	0.67	0.25
BBF-SED-36	4-6	8/8/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	0-2	7/28/00	ND	ND	ND	ND	ND	0.65	0.39
BBF-SED-37	4-6	7/28/00	ND	ND	ND	ND	ND	0.55	0.24
BBF-SED-37	6-8	7/28/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	0-2	8/7/00	ND	ND	ND	ND	ND	4.7	1.4
BBF-SED-39	4-6	8/7/00	ND	ND	ND	ND	ND	1.1	0.36

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
BBF-SED-39	8-10	8/7/00	ND	ND	ND	ND	ND	0.089	ND
BBF-SED-40	0-2	7/31/00	ND	ND	ND	ND	ND	0.02	ND
BBF-SED-40	2-4	7/31/00	ND	ND	ND	ND	ND	0.046	0.022
BBF-SED-40	6-8	7/31/00	ND	ND	ND	ND	ND	0.023	ND
BBF-SED-41	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	0-2	7/31/00	ND	ND	ND	ND	ND	0.11	0.054
BBF-SED-42	2-4	7/31/00	ND	ND	ND	ND	ND	0.032	0.019
BBF-SED-42	4-6	7/31/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	0-2	8/1/00	ND	ND	ND	ND	ND	0.29	0.14
BBF-SED-43	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	0-2	8/1/00	ND	ND	ND	ND	ND	1.1	0.52
BBF-SED-45	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	0-2	8/3/00	ND	ND	ND	ND	ND	0.39	0.16
BBF-SED-46	4-6	8/3/00	ND	ND	ND	ND	ND	0.077	ND
BBF-SED-46	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	0-2	8/3/00	ND	ND	ND	ND	ND	2.2	0.85
BBF-SED-47	4-6	8/3/00	ND	ND	ND	ND	ND	0.086	ND
BBF-SED-47	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	0-2	8/1/00	ND	ND	ND	ND	ND	0.058	ND
BBF-SED-48	2-4	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	0-2	8/2/00	ND	ND	ND	ND	ND	4.4	1.1
BBF-SED-49	4-6	8/2/00	ND	ND	ND	ND	ND	0.33	0.13
BBF-SED-49	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	0-2	8/2/00	ND	ND	ND	ND	ND	6.1	1.5
BBF-SED-50	4-6	8/2/00	ND	ND	ND	ND	ND	0.79	0.26
BBF-SED-50	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	0-2	8/2/00	ND	ND	ND	ND	ND	0.44	0.23

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
BBF-SED-51	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	0-2	8/3/00	ND	ND	ND	ND	ND	0.057	ND
BBF-SED-52	4-6	8/3/00	ND	ND	ND	ND	ND	0.3	0.15
BBF-SED-52	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	0-2	8/3/00	ND	ND	ND	ND	ND	2.3	0.9
BBF-SED-53	4-6	8/3/00	ND	ND	ND	ND	ND	0.062	ND
BBF-SED-53	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	0-2	8/2/00	ND	ND	ND	ND	ND	4.4	1.2
BBF-SED-54	6-8	8/2/00	ND	ND	ND	ND	ND	0.39	0.17
BBF-SED-54	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	0-2	8/2/00	ND	ND	ND	ND	ND	1.8	0.7
BBF-SED-55	6-8	8/2/00	ND	ND	ND	ND	ND	0.84	0.44
BBF-SED-55	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	2-4	8/2/00	ND	ND	ND	ND	ND	0.037	ND
BBF-SED-57	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	4-6	8/2/00	ND	ND	ND	ND	ND	0.97	0.46
BBF-SED-57	8-10	8/2/00	ND	ND	ND	ND	ND	0.18	0.063
BBF-SED-58	0-2	8/1/00	ND	ND	ND	ND	ND	5.3	1.7
BBF-SED-58	2-4	8/1/00	ND	ND	ND	ND	ND	1.8	0.94
BBF-SED-58	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	10-12	8/1/00	ND	ND	ND	ND	ND	0.115	0.05
BBF-SED-59	0-2	8/1/00	ND	ND	ND	ND	ND	0.26	0.076
BBF-SED-59	4-6	8/1/00	ND	ND	ND	ND	ND	0.21	0.091
BBF-SED-59	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	0-2	8/1/00	ND	ND	ND	ND	ND	0.097	0.098
BBF-SED-60	2-4	8/1/00	ND	ND	ND	ND	ND	0.14	0.13
BBF-SED-60	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate
BBF-SED-01	0-2	10/18/00	0.290	0.042	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	0-2	7/19/00	0.014	0.011	0.017	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	6-8	7/19/00	ND	0.0049	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	8-10	7/19/00	ND	0.0024	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	0-2	7/19/00	---	---	---	---	---	---	---	---	---	---	---	---
BBF-SED-03	2-4	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	0-2	7/20/00	0.0046	0.0018	0.0023	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	2-4	7/20/00	ND	0.0025	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	6-8	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	0-2	7/21/00	0.066	0.0044	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	2-4	7/21/00	0.022	0.0072	0.0028	ND	0.0027	ND	ND	ND	0.0035	ND	ND	ND
BBF-SED-05	8-10	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	0-2	7/25/00	---	---	---	---	---	---	---	---	---	---	---	---
BBF-SED-06	4-6	7/25/00	ND	ND	0.0035	ND	ND	0.00098	ND	ND	ND	ND	ND	ND
BBF-SED-06	6-8	7/25/00	0.0062	ND	0.0045	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	0-2	9/7/00	0.063	0.075	ND	ND	ND	ND	ND	ND	0.048	ND	ND	ND
BBF-SED-07	2-4	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	6-8	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	2-4	9/6/00	---	---	---	---	---	---	---	---	---	---	---	---
BBF-SED-09	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-09	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	0-2	7/26/00	---	---	---	---	---	---	---	---	---	---	---	---
BBF-SED-11	6-8	7/26/00	0.0042	ND	0.0036	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	8-10	7/26/00	0.0035	ND	0.0055	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	6-8	9/6/00	0.042	0.04	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	0-2	9/6/00	0.238	0.238	0.064	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	0-2	9/6/00	0.634	0.416	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	2-4	7/26/00	---	---	---	---	---	---	---	---	---	---	---	---

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate
BBF-SED-15	4-6	7/26/00	0.014	0.0035	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	2-4	9/6/00	ND	0.031	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	0-2	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	2-4	7/26/00	ND	ND	0.021	ND	ND	ND	ND	ND	ND	ND	ND	0.024
BBF-SED-17	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25
BBF-SED-18	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	4-6	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	0-2	8/15/00	0.059	ND	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	4-6	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	8-10	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
BBF-SED-20	0-2	8/14/00	0.49	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-20	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21	0-2	8/14/00	0.055	0.095	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21A	2-4	8/14/00	---	---	---	---	---	---	---	---	---	---	---	---
BBF-SED-21A	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	2-4	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	0-2	8/15/00	0.064	0.1	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	12-14	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	0-2	8/11/00	ND	ND	ND	ND	ND	0.078	ND	ND	ND	ND	ND	ND
BBF-SED-24	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	6-8	8/11/00	ND	ND	ND	ND	ND	0.0115	ND	ND	ND	ND	ND	ND
BBF-SED-25	0-2	8/11/00	0.3	0.33	0.23	ND	ND	ND	ND	ND	0.095	ND	ND	ND
BBF-SED-25	2-4	8/11/00	0.31	0.33	0.21	ND	ND	ND	ND	ND	0.12	ND	ND	ND
BBF-SED-25	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	0-2	8/11/00	0.25	0.28	0.14	ND	ND	ND	ND	ND	0.057	ND	ND	ND
BBF-SED-26	4-6	8/11/00	ND	ND	ND	ND	ND	0.055	ND	ND	ND	ND	ND	ND
BBF-SED-26	12-14	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	0-2	8/11/00	1.2	0.65	0.85	ND	0.091	ND	ND	ND	0.72	ND	ND	ND
BBF-SED-27	4-6	8/11/00	0.18	0.15	0.18	ND	0.047	ND	ND	ND	0.077	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate
BBF-SED-27	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	0-2	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	2-4	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	10-12	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	0-2	8/9/00	ND	0.031	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	0-2	7/28/00	0.045	0.021	0.019	ND	0.019	ND	ND	ND	0.014	ND	ND	ND
BBF-SED-31	4-6	7/28/00	0.49	ND	ND	ND	0.047	ND	ND	ND	0.67	ND	ND	ND
BBF-SED-31	10-12	7/28/00	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	0-2	8/9/00	0.18	0.063	ND	ND	0.045	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	4-6	8/9/00	0.85	0.44	0.78	ND	0.028	0.039	ND	ND	ND	ND	ND	ND
BBF-SED-32	8-10	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-33	0-2	7/27/00	0.12	0.054	0.044	ND	0.022	ND	ND	ND	0.033	ND	ND	ND
BBF-SED-33	2-4	7/27/00	0.016	ND	0.0055	ND	0.0049	ND	ND	ND	ND	ND	ND	ND
BBF-SED-33	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	0-2	8/8/00	0.52	0.14	0.64	ND	0.081	ND	0.49	ND	ND	ND	ND	ND
BBF-SED-34	4-6	8/8/00	ND	ND	0.096	ND	ND	ND	0.54	ND	ND	ND	ND	ND
BBF-SED-34	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	0-2	8/8/00	0.25	0.18	0.26	ND	ND	0.055	0.36	ND	ND	ND	ND	ND
BBF-SED-35	4-6	8/8/00	ND	ND	ND	ND	ND	0.044	0.35	ND	ND	ND	ND	ND
BBF-SED-35	8-10	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	0-2	8/8/00	0.11	0.075	0.2	ND	ND	0.073	0.55	ND	ND	ND	ND	ND
BBF-SED-36	4-6	8/8/00	ND	ND	ND	ND	ND	ND	0.043	ND	ND	ND	ND	ND
BBF-SED-36	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	0-2	7/28/00	0.31	0.14	ND	ND	0.16	ND	ND	ND	0.11	ND	ND	ND
BBF-SED-37	4-6	7/28/00	0.17	0.089	ND	ND	0.035	ND	ND	ND	0.058	ND	ND	ND
BBF-SED-37	6-8	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	0-2	8/7/00	0.68	0.65	0.77	ND	0.052	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	4-6	8/7/00	0.2	0.15	0.23	ND	0.028	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	8-10	8/7/00	0.012	ND	0.015	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate
BBF-SED-40	0-2	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	2-4	7/31/00	0.0066	ND	0.0051	ND	0.0036	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	6-8	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	0-2	8/4/00	ND	ND	ND	ND	ND	0.0047	0.0082	ND	ND	ND	ND	ND
BBF-SED-41	4-6	8/4/00	ND	ND	ND	ND	ND	ND	0.0032	ND	ND	ND	ND	ND
BBF-SED-41	6-8	8/4/00	ND	ND	ND	ND	ND	0.0014	0.011	ND	ND	ND	ND	ND
BBF-SED-42	0-2	7/31/00	0.025	ND	0.012	ND	0.008	ND	ND	ND	0.014	ND	ND	ND
BBF-SED-42	2-4	7/31/00	0.0049	ND	0.0029	ND	0.0014	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	4-6	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	0-2	8/1/00	0.092	0.081	0.042	ND	0.006	ND	ND	ND	0.018	ND	ND	ND
BBF-SED-43	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	0-2	8/4/00	ND	ND	0.0052	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	0-2	8/1/00	0.46	0.31	0.29	ND	0.014	ND	ND	ND	0.13	ND	ND	ND
BBF-SED-45	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0048
BBF-SED-46	0-2	8/3/00	ND	ND	0.082	0.094	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	0-2	8/3/00	0.37	0.53	0.46	ND	0.043	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	0-2	8/1/00	0.037	0.019	0.022	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	2-4	8/1/00	ND	ND	0.0038	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	0.0016	ND	ND	ND	ND
BBF-SED-49	0-2	8/2/00	1.5	0.34	0.8	ND	0.17	ND	ND	ND	0.16	ND	ND	ND
BBF-SED-49	4-6	8/2/00	ND	ND	0.052	ND	ND	ND	0.095	ND	ND	ND	ND	ND
BBF-SED-49	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	0-2	8/2/00	1.8	0.49	0.99	ND	0.1	ND	ND	ND	0.52	ND	ND	ND
BBF-SED-50	4-6	8/2/00	0.25	0.082	0.1	ND	0.018	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	0-2	8/2/00	0.1	ND	0.16	ND	0.022	0.037	ND	ND	ND	ND	ND	ND
BBF-SED-51	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate
BBF-SED-51	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	4-6	8/3/00	ND	ND	0.048	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	0-2	8/3/00	0.67	0.6	0.59	ND	0.038	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	0-2	8/2/00	0.43	0.26	0.58	ND	0.067	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	6-8	8/2/00	0.041	0.048	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	0-2	8/2/00	0.27	0.22	0.48	ND	0.037	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	6-8	8/2/00	0.071	0.066	0.16	ND	ND	0.047	ND	ND	ND	ND	ND	ND
BBF-SED-55	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	0-2	8/2/00	ND	ND	0.15	ND	ND	ND	0.15	ND	ND	ND	ND	ND
BBF-SED-57	4-6	8/2/00	0.18	0.15	0.23	ND	0.03	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	8-10	8/2/00	0.021	ND	0.023	ND	ND	ND	0.073	ND	ND	ND	ND	ND
BBF-SED-58	0-2	8/1/00	2.3	0.55	1.5	ND	0.13	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	2-4	8/1/00	0.55	0.36	0.58	ND	0.071	ND	ND	ND	0.22	ND	ND	ND
BBF-SED-58	6-8	8/1/00	0.0028	ND	0.0049	ND	0.0018	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	10-12	8/1/00	0.041	0.0295	0.024	ND	0.0047	ND	ND	ND	0.006	ND	ND	ND
BBF-SED-59	0-2	8/1/00	0.17	0.05	0.039	ND	0.002	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	4-6	8/1/00	0.041	0.049	0.026	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	0-2	8/1/00	ND	0.0082	0.036	ND	ND	0.011	ND	ND	ND	ND	ND	ND
BBF-SED-60	2-4	8/1/00	0.015	0.015	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
BBF-SED-01	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	0-2	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	6-8	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-02	8-10	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-03	0-2	7/19/00	---	---	---	---	---	---	---	---	---	---
BBF-SED-03	2-4	7/19/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	0-2	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	2-4	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-04	6-8	7/20/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	0-2	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-05	2-4	7/21/00	ND	ND	ND	ND	0.0036	ND	ND	ND	ND	ND
BBF-SED-05	8-10	7/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	0-2	7/25/00	---	---	---	---	---	---	---	---	---	---
BBF-SED-06	4-6	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-06	6-8	7/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	0-2	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	2-4	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-07	6-8	9/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-08	2-4	9/6/00	---	---	---	---	---	---	---	---	---	---
BBF-SED-09	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-09	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-10	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	0-2	7/26/00	---	---	---	---	---	---	---	---	---	---
BBF-SED-11	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-11	8-10	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-12	6-8	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-13	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-14	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	2-4	7/26/00	---	---	---	---	---	---	---	---	---	---

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
BBF-SED-15	4-6	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-15	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	0-2	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	2-4	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-16	4-6	9/6/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	0-2	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	2-4	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-17	6-8	7/26/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	0-2	7/27/00	ND	ND	ND	ND	0.0037	ND	ND	ND	ND	ND
BBF-SED-18	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-18	4-6	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	0-2	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	4-6	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-19	8-10	8/15/00	—	—	—	—	—	—	—	—	—	—
BBF-SED-20	0-2	8/14/00	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND
BBF-SED-20	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-21A	2-4	8/14/00	—	—	—	—	—	—	—	—	—	—
BBF-SED-21A	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-22	2-4	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	0-2	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-23	12-14	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-24	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	2-4	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-25	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-26	12-14	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-27	4-6	8/11/00	ND	ND	ND	ND	0.049	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
BBF-SED-27	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	0-2	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	2-4	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-28	10-12	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	0-2	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-29	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	0-2	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-30	2-4	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	0-2	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	4-6	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-31	10-12	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	0-2	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-32	8-10	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-33	0-2	7/27/00	ND	ND	ND	ND	0.062	ND	ND	ND	ND	ND
BBF-SED-33	2-4	7/27/00	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND
BBF-SED-33	6-8	7/27/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	0-2	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	4-6	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-34	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	0-2	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	4-6	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-35	8-10	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	0-2	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	4-6	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-36	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	0-2	7/28/00	ND	ND	ND	ND	0.32	ND	ND	ND	ND	ND
BBF-SED-37	4-6	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-37	6-8	7/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-38	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND	0.059	ND	ND
BBF-SED-39	4-6	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-39	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
BBF-SED-40	0-2	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	2-4	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-40	6-8	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-41	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	0-2	7/31/00	ND	ND	ND	ND	0.003	ND	ND	ND	ND	ND
BBF-SED-42	2-4	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-42	4-6	7/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	0-2	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-43	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	4-6	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-44	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	0-2	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-45	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-46	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	0-2	8/3/00	ND	0.058	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-47	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	0-2	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	2-4	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-48	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	0-2	8/2/00	ND	0.07	ND	ND	0.6	ND	ND	ND	ND	ND
BBF-SED-49	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-49	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-50	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-51	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
BBF-SED-51	4-6	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-52	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-53	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-54	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	6-8	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-55	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-56	2-4	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	0-2	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	4-6	8/2/00	ND	0.079	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-57	8-10	8/2/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	0-2	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	2-4	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	6-8	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-58	10-12	8/1/00	ND	ND	ND	ND	0.004	ND	ND	ND	ND	ND
BBF-SED-59	0-2	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	4-6	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-59	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	0-2	8/1/00	ND	0.037	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	2-4	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BBF-SED-60	8-10	8/1/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	TCLP Arsenic (mg/L)	Arsenic	Barium	TCLP Cadmium (mg/L)	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	TCLP Mercury (mg/L)	Mercury	Selenium	Silver
BBF-SED-01	0-2	10/18/00	—	31	98	—	4.0	—	70	1.0	440	—	1.4	ND	ND
BBF-SED-02	0-2	7/19/00	—	ND	ND	—	ND	—	30	—	87	—	0.54	ND	ND
BBF-SED-02	6-8	7/19/00	—	ND	ND	—	ND	—	18	—	18	—	0.19	ND	ND
BBF-SED-02	8-10	7/19/00	—	ND	ND	—	ND	—	11	—	10	—	0.091	ND	ND
BBF-SED-03	0-2	7/19/00	—	ND	ND	—	ND	b	13	—	39	—	0.067	ND	ND
BBF-SED-03	2-4	7/19/00	—	ND	42	—	ND	—	25	—	13	—	ND	ND	ND
BBF-SED-04	0-2	7/20/00	—	ND	ND	—	ND	—	15	—	31	—	0.15	ND	ND
BBF-SED-04	2-4	7/20/00	—	7.6	28	—	0.3	—	24	—	39	—	0.59	ND	ND
BBF-SED-04	6-8	7/20/00	—	11	60	—	0.27	—	18	ND	160	—	0.77	3.6	ND
BBF-SED-05	0-2	7/21/00	—	ND	ND	—	ND	—	16	—	56	—	0.044	ND	ND
BBF-SED-05	2-4	7/21/00	—	ND	28	—	ND	—	21	—	26	—	ND	ND	ND
BBF-SED-05	8-10	7/21/00	—	ND	ND	—	ND	—	16	—	ND	—	0.041	ND	ND
BBF-SED-06	0-2	7/25/00	—	ND	40	—	0.9	—	31	—	57	—	0.18	ND	ND
BBF-SED-06	4-6	7/25/00	—	ND	ND	—	0.74	—	12	—	20	—	0.094	ND	ND
BBF-SED-06	6-8	7/25/00	—	ND	ND	—	ND	—	22	—	31	—	0.09	ND	ND
BBF-SED-07	0-2	9/7/00	—	ND	160	—	4.7	ND	160	1.0	920	ND	4.4	ND	ND
BBF-SED-07	2-4	9/7/00	—	40	230	—	9.6	ND	390	1.9	1600	ND	5.4	ND	14
BBF-SED-07	6-8	9/7/00	—	16	46	—	ND	—	42	—	31	—	0.39	ND	ND
BBF-SED-08	0-2	9/6/00	—	22	64	—	0.98	—	41	ND	250	—	0.71	ND	ND
BBF-SED-08	2-4	9/6/00	—	ND	ND	—	ND	—	10	—	21	—	0.053	ND	ND
BBF-SED-09	0-2	9/6/00	—	46	130	—	6.1	ND	140	ND	740	—	2.9	ND	ND
BBF-SED-09	2-4	9/6/00	—	18	ND	—	ND	—	22	—	82	—	0.51	ND	ND
BBF-SED-10	0-2	9/6/00	ND	110	240	—	11	—	59	1.2	1100	ND	8.9	ND	5.6
BBF-SED-10	2-4	9/6/00	—	ND	ND	—	ND	—	12	—	6.9	—	ND	ND	ND
BBF-SED-11	0-2	7/26/00	—	ND	ND	—	1	—	14	—	96	—	0.15	ND	ND
BBF-SED-11	6-8	7/26/00	—	ND	ND	—	ND	—	8.8	—	16	—	0.42	ND	ND
BBF-SED-11	8-10	7/26/00	—	ND	ND	—	ND	—	10	—	38	—	0.076	ND	ND
BBF-SED-12	0-2	9/6/00	—	47	230	0.13	23	ND	260	2.1	1500	0.00085	5.7	ND	9.4
BBF-SED-12	2-4	9/6/00	—	87	220	—	7.5	ND	110	ND	1200	ND	4.5	ND	ND
BBF-SED-12	6-8	9/6/00	—	ND	ND	—	ND	—	7.7	—	16	—	0.047	ND	ND
BBF-SED-13	0-2	9/6/00	—	44	230	—	14	ND	420	2.2	1700	ND	5.2	ND	13
BBF-SED-13	2-4	9/6/00	—	16	ND	—	ND	—	30	1.2	140	—	0.73	ND	ND
BBF-SED-13	4-6	9/6/00	—	ND	ND	—	ND	—	11	—	7.3	—	ND	ND	ND
BBF-SED-14	0-2	9/6/00	—	100	220	—	16	—	62	1.3	1100	ND	4.3	ND	ND
BBF-SED-14	2-4	9/6/00	—	30	87	—	ND	—	54	ND	290	—	1.0	ND	ND
BBF-SED-15	2-4	7/26/00	—	ND	ND	—	ND	—	11	—	90	—	0.34	ND	ND
BBF-SED-15	4-6	7/26/00	—	ND	ND	—	ND	—	36	ND	330	—	0.71	ND	ND
BBF-SED-15	6-8	7/26/00	—	ND	52	—	ND	—	32	—	17	—	0.095	ND	ND
BBF-SED-16	0-2	9/6/00	—	48	240	—	11	ND	360	2.1	1500	0.00046	4.7	ND	13
BBF-SED-16	2-4	9/6/00	—	47	240	—	11	ND	390	1.8	1400	—	3.5	ND	15
BBF-SED-16	4-6	9/6/00	—	27	69	—	ND	—	37	ND	260	—	1.0	ND	ND
BBF-SED-17	0-2	7/26/00	—	ND	52	—	ND	—	29	—	11	—	ND	ND	ND
BBF-SED-17	2-4	7/26/00	—	ND	44	—	ND	—	25	—	22	—	0.093	3.7	ND
BBF-SED-17	6-8	7/26/00	—	ND	41	—	ND	—	15	—	66	—	1.1	ND	ND
BBF-SED-18	0-2	7/27/00	—	15	ND	—	ND	—	36	—	ND	—	ND	ND	ND
BBF-SED-18	2-4	7/27/00	—	ND	ND	—	ND	—	27	—	12	—	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
BACK BAY FENS
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	TCLP Arsenic (mg/L)	Arsenic	Barium	TCLP Cadmium (mg/L)	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	TCLP Mercury (mg/L)	Mercury	Selenium	Silver
BBF-SED-18	4-6	7/27/00	—	11	ND	—	ND	—	32	—	ND	—	ND	ND	ND
BBF-SED-19	0-2	8/15/00	—	ND	ND	—	1.1	—	23	ND	120	—	0.4	ND	ND
BBF-SED-19	4-6	8/15/00	—	ND	ND	—	ND	—	7.3	—	7.4	—	0.032	ND	ND
BBF-SED-19	8-10	8/15/00	—	ND	ND	—	ND	—	16	—	ND	—	ND	ND	ND
BBF-SED-20	0-2	8/14/00	—	70	210	—	10	ND	110	1.4	950	—	3.2	ND	ND
BBF-SED-20	4-6	8/14/00	—	12	ND	—	ND	—	28	—	16	—	ND	ND	ND
BBF-SED-21	0-2*	8/14/00	—	22.5	149	—	8.7	—	134.5	0.7	795	—	1.395	ND	2.75
BBF-SED-21A	2-4	8/14/00	—	ND	ND	—	ND	—	14	—	87	—	0.49	ND	ND
BBF-SED-21A	6-8	8/14/00	—	11	ND	—	ND	—	25	—	5.4	—	ND	ND	ND
BBF-SED-22	0-2	8/14/00	—	21	76	—	1.5	—	46	ND	280	—	0.82	ND	ND
BBF-SED-22	2-4	8/14/00	—	11	ND	—	ND	—	26	—	18	—	ND	ND	ND
BBF-SED-23	0-2	8/15/00	—	ND	97	—	5.4	—	75	ND	500	—	0.93	ND	ND
BBF-SED-23	2-4	8/15/00	—	ND	ND	—	ND	—	12	—	25	—	0.069	ND	ND
BBF-SED-23	12-14	8/15/00	—	13	ND	—	ND	—	32	—	8.4	—	ND	ND	ND
BBF-SED-24	0-2	8/11/00	—	19	140	—	10	—	28	1.2	580	—	2.2	ND	ND
BBF-SED-24	4-6	8/11/00	—		—	—	—	—	—	1.5	—	—	1.8	—	—
BBF-SED-24	6-8*	8/11/00	—	4.75	ND	—	ND	—	21.5	—	8.8	—	0.023	ND	ND
BBF-SED-25	0-2	8/11/00	—	50	140	—	4.6	—	44	1.6	740	—	2.6	ND	ND
BBF-SED-25	2-4	8/11/00	—	19	240	—	9.5	ND	110	1.4	1200	—	2.1	ND	4.7
BBF-SED-25	6-8	8/11/00	—	ND	ND	—	ND	—	19	—	12	—	ND	ND	ND
BBF-SED-26	0-2	8/11/00	—	ND	ND	—	ND	—	23	—	8.7	—	0.41	ND	ND
BBF-SED-26	4-6	8/11/00	—	ND	ND	—	ND	—	10	—	67	—	0.11	ND	ND
BBF-SED-26	12-14	8/11/00	—	28	85	—	1.9	—	21	ND	330	—	0.45	ND	ND
BBF-SED-27	0-2	8/11/00	—	17	340	—	9.4	ND	210	1.5	2100	—	3.1	ND	7.5
BBF-SED-27	4-6	8/11/00	—	40	300	—	5.3	—	60	—	1200	—	2.8	ND	ND
BBF-SED-27	6-8	8/11/00	—	16	48	—	ND	—	41	ND	190	—	0.44	ND	ND
BBF-SED-28	0-2	8/9/00	—	ND	ND	—	1.6	—	11	—	64	—	0.15	ND	ND
BBF-SED-28	2-4	8/9/00	—	ND	35	—	1.5	—	15	1.6	130	—	1.2	ND	ND
BBF-SED-28	10-12	8/9/00	—	ND	ND	—	ND	—	11	—	12	—	0.03	ND	ND
BBF-SED-29	0-2	8/9/00	—	ND	39	—	ND	—	17	ND	110	—	0.24	ND	ND
BBF-SED-29	4-6	8/9/00	—	ND	ND	—	ND	—	9.9	—	61	—	0.2	ND	ND
BBF-SED-29	6-8	8/9/00	—	ND	ND	—	ND	—	8	—	36	—	0.073	ND	ND
BBF-SED-30	0-2	7/27/00	—	ND	ND	—	ND	—	25	—	21	—	0.068	ND	ND
BBF-SED-30	2-4	7/27/00	—	ND	ND	—	ND	—	24	—	13	—	ND	ND	ND
BBF-SED-31	0-2	7/28/00	—	ND	58	—	1.3	—	21	0.99	250	—	0.32	ND	ND
BBF-SED-31	4-6	7/28/00	—	ND	51	—	1.9	—	24	2.6	300	—	0.44	ND	ND
BBF-SED-31	10-12	7/28/00	—	ND	ND	—	ND	—	9	—	11	—	ND	ND	ND
BBF-SED-32	0-2	8/9/00	—	ND	64	—	1.3	—	21	2.6	440	—	0.59	ND	ND
BBF-SED-32	4-6	8/9/00	—	10	240	—	5.2	—	44	3.0	1000	—	1.5	ND	ND
BBF-SED-32	8-10	8/9/00	—	ND	49	—	0.98	—	22	ND	260	—	0.92	ND	ND
BBF-SED-33	0-2	7/27/00	—	ND	36	—	ND	—	12	1.2	140	—	4.9	ND	ND
BBF-SED-33	2-4	7/27/00	—	ND	90	—	2	—	22	ND	440	—	0.52	ND	ND
BBF-SED-33	6-8	7/27/00	—	ND	ND	—	ND	—	16	—	ND	—	ND	ND	ND
BBF-SED-34	0-2	8/8/00	—	ND	210	—	4.5	—	75	1.7	990	—	2.1	ND	ND
BBF-SED-34	4-6	8/8/00	—	24	350	—	6.6	—	44	1.5	1400	—	2.6	ND	4.8
BBF-SED-34	6-8	8/8/00	—	ND	ND	—	ND	—	26	—	46	—	0.049	ND	ND

MUDDY RIVER RESTORATION PROJECT
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Sample ID	Sample Depth (ft BGS)	Sample Date	TCLP Arsenic (mg/L)	Arsenic	Barium	TCLP Cadmium (mg/L)	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	TCLP Mercury (mg/L)	Mercury	Selenium	Silver
BBF-SED-35	0-2	8/8/00	—	18	360	—	11	ND	110	3.3	1700	—	2.6	ND	5.7
BBF-SED-35	4-6	8/8/00	—	20	260	—	2.3	—	41	1.7	910	—	6.3	ND	2.7
BBF-SED-35	8-10	8/8/00	—	8.9	ND	—	ND	—	23	—	29	—	0.061	ND	ND
BBF-SED-36	0-2	8/8/00	—	18	250	—	3.3	—	27	ND	950	—	1.5	ND	ND
BBF-SED-36	4-6	8/8/00	—	22	300	—	2.9	—	30	3.6	930	—	3.4	ND	ND
BBF-SED-36	6-8	8/8/00	—	ND	ND	—	ND	—	17	—	48	—	0.083	ND	ND
BBF-SED-37	0-2	7/28/00	—	ND	130	—	3	—	47	1.0	810	—	0.82	ND	ND
BBF-SED-37	4-6	7/28/00	—	24	250	—	2.3	—	34	3.5	1000	—	2.5	ND	ND
BBF-SED-37	6-8	7/28/00	—	ND	ND	—	ND	—	16	—	15	—	ND	ND	ND
BBF-SED-38	0-2	8/7/00	—	ND	47	—	ND	—	21	ND	140	—	1.7	ND	ND
BBF-SED-38	6-8	8/7/00	—	11	ND	—	ND	—	26	—	12	—	ND	ND	ND
BBF-SED-39	0-2	8/7/00	—	17	350	—	13	0.15	160	4.4	1900	—	3.5	ND	6.5
BBF-SED-39	4-6	8/7/00	—	39	320	—	7.2	—	57	4.9	1500	—	2.5	ND	ND
BBF-SED-39	8-10	8/7/00	—	ND	ND	—	ND	—	33	—	31	—	1.3	ND	ND
BBF-SED-40	0-2	7/31/00	—	4.3	15	—	ND	—	11	—	13	—	ND	ND	ND
BBF-SED-40	2-4	7/31/00	—	2.8	19	—	0.15	—	17	—	53	—	0.032	ND	ND
BBF-SED-40	6-8	7/31/00	—	3.7	19	—	ND	—	13	—	30	—	0.05	ND	ND
BBF-SED-41	0-2	8/4/00	—	ND	ND	—	ND	—	13	—	91	—	0.14	ND	ND
BBF-SED-41	4-6	8/4/00	—	ND	ND	—	ND	—	13	—	23	—	0.35	ND	ND
BBF-SED-41	6-8	8/4/00	—	ND	ND	—	ND	—	26	—	15	—	0.19	ND	ND
BBF-SED-42	0-2	7/31/00	—	8	38	—	1.2	—	16	ND	130	—	0.14	ND	ND
BBF-SED-42	2-4	7/31/00	—	9.4	17	—	ND	—	7.6	—	47	—	0.11	ND	ND
BBF-SED-42	4-6	7/31/00	—	8	27	—	ND	—	26	—	15	—	0.19	ND	ND
BBF-SED-43	0-2	8/1/00	—	ND	99	—	2.2	—	33	1.5	390	—	0.56	ND	ND
BBF-SED-43	4-6	8/1/00	—	ND	98	—	ND	—	28	1.4	320	—	1.6	ND	ND
BBF-SED-43	6-8	8/1/00	—	ND	ND	—	ND	—	32	—	86	—	0.17	ND	ND
BBF-SED-44	0-2	8/4/00	—	12	61	—	ND	—	39	ND	300	—	2.8	ND	ND
BBF-SED-44	4-6	8/4/00	—	19	72	—	ND	—	41	ND	310	—	2.1	ND	ND
BBF-SED-44	6-8	8/4/00	—	ND	ND	—	ND	—	28	—	21	—	0.12	ND	ND
BBF-SED-45	0-2	8/1/00	—	14	370	—	14	ND	100	5.4	2100	—	2.3	ND	4.9
BBF-SED-45	4-6	8/1/00	—	16	62	—	ND	—	37	1.6	270	—	2.2	ND	ND
BBF-SED-45	6-8	8/1/00	—	28	96	—	ND	—	68	2.9	510	—	3.1	ND	ND
BBF-SED-46	0-2	8/3/00	—	19	110	—	ND	—	59	ND	530	—	5.6	ND	ND
BBF-SED-46	4-6	8/3/00	—	37	98	—	ND	—	68	ND	480	—	6.1	ND	ND
BBF-SED-46	6-8	8/3/00	—	ND	48	—	ND	—	43	ND	120	—	0.66	ND	ND
BBF-SED-47	0-2	8/3/00	—	25	360	—	11	—	71	5.4	1600	—	3.6	ND	5.0
BBF-SED-47	4-6	8/3/00	—	ND	150	—	ND	—	39	2.6	490	—	3.2	ND	ND
BBF-SED-47	6-8	8/3/00	—	49	81	—	ND	—	68	ND	390	—	7.6	ND	ND
BBF-SED-48	0-2	8/1/00	—	22	150	—	3.9	—	34	3.0	700	—	2.2	ND	ND
BBF-SED-48	2-4	8/1/00	—	12	78	—	ND	—	31	5.5	270	—	2.2	ND	ND
BBF-SED-48	4-6	8/1/00	—	ND	ND	—	ND	—	26	—	32	—	0.19	ND	ND
BBF-SED-49	0-2	8/2/00	—	15	280	—	7.5	ND	110	3.6	1400	—	2.4	ND	ND
BBF-SED-49	4-6	8/2/00	—	ND	89	—	ND	—	33	1.2	290	—	4.3	ND	ND
BBF-SED-49	6-8	8/2/00	—	21	100	—	0.5	—	53	ND	400	—	1.4	ND	ND
BBF-SED-50	0-2	8/2/00	—	ND	230	—	5.2	—	34	3.8	1100	—	1.6	ND	ND
BBF-SED-50	4-6	8/2/00	—	ND	ND	—	ND	—	11	—	35	—	0.31	ND	ND

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Sample ID	Sample Depth (ft BGS)	Sample Date	TCLP Arsenic (mg/L)	Arsenic	Barium	TCLP Cadmium (mg/L)	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	TCLP Mercury (mg/L)	Mercury	Selenium	Silver
BBF-SED-50	6-8	8/2/00	—	ND	ND	—	ND	—	24	—	ND	—	ND	ND	ND
BBF-SED-51	0-2	8/2/00	—	ND	210	—	5.6	—	53	5.0	1000	—	1.7	ND	3.3
BBF-SED-51	2-4	8/2/00	—	ND	ND	—	ND	—	23	—	19	—	ND	ND	ND
BBF-SED-51	4-6	8/2/00	—	ND	ND	—	ND	—	28	—	ND	—	ND	ND	ND
BBF-SED-52	0-2	8/3/00	—	32	290	—	5.5	—	59	4.1	1200	—	2.3	ND	ND
BBF-SED-52	4-6	8/3/00	—	35	340	—	8.5	—	76	5.8	1500	—	2.5	6.0	3.8
BBF-SED-52	6-8	8/3/00	—	ND	11	—	ND	—	8.9	—	8.6	—	ND	ND	ND
BBF-SED-53	0-2	8/3/00	—	15	240	—	7.2	—	50	4.1	1100	—	2.4	ND	ND
BBF-SED-53	4-6	8/3/00	—	ND	ND	—	ND	—	18	—	90	—	0.58	ND	ND
BBF-SED-53	6-8	8/3/00	—	ND	ND	—	ND	—	10	—	8.7	—	ND	ND	ND
BBF-SED-54	0-2	8/2/00	—	16	340	—	12	ND	110	5.2	1700	—	3.4	ND	6.9
BBF-SED-54	6-8	8/2/00	—	33	360	—	8.9	—	75	4.4	1500	—	2.5	ND	3.9
BBF-SED-54	8-10	8/2/00	—	ND	ND	—	ND	—	7.3	—	15	—	0.17	ND	ND
BBF-SED-55	0-2	8/2/00	—	20	330	—	11	—	78	5.5	1600	—	2.1	ND	5.1
BBF-SED-55	6-8	8/2/00	—	25	260	—	6.4	—	56	6.1	1100	—	2.9	ND	ND
BBF-SED-55	8-10	8/2/00	—	ND	ND	—	ND	—	11	—	12	—	ND	ND	ND
BBF-SED-56	0-2	8/2/00	—	ND	ND	—	ND	—	13	—	62	—	0.42	ND	ND
BBF-SED-56	2-4	8/2/00	—	ND	ND	—	ND	—	14	—	21	—	0.063	ND	ND
BBF-SED-57	0-2	8/2/00	—	ND	120	—	4.1	—	32	1.6	600	—	1.8	ND	ND
BBF-SED-57	4-6	8/2/00	—	14	300	—	8.9	—	69	4.0	1300	—	2.1	ND	3.6
BBF-SED-57	8-10	8/2/00	—	ND	ND	—	ND	—	9.5	—	77	—	0.14	ND	ND
BBF-SED-58	0-2	8/1/00	—	ND	300	—	11	ND	130	5.1	1500	—	0.056	ND	6.5
BBF-SED-58	2-4	8/1/00	—	21	370	—	13	—	98	4.7	1800	—	0.11	ND	6.4
BBF-SED-58	6-8	8/1/00	—	ND	32	—	ND	—	10	—	15	—	ND	ND	ND
BBF-SED-58	10-12*	8/1/00	—	ND	ND	—	ND	—	10.1	—	24.7	—	0.985	ND	ND
BBF-SED-59	0-2	8/1/00	—	ND	32	—	ND	—	13	—	26	—	1.6	ND	ND
BBF-SED-59	4-6	8/1/00	—	29	84	—	2.2	—	58	1.4	560	—	ND	ND	ND
BBF-SED-59	8-10	8/1/00	—	ND	ND	—	ND	—	32	—	ND	—	1.8	ND	ND
BBF-SED-60	0-2	8/1/00	—	24	100	—	3.2	—	50	2.5	560	—	0.089	ND	ND
BBF-SED-60	2-4	8/1/00	—	29	150	—	5.4	—	65	ND	800	—	ND	ND	ND
BBF-SED-60	8-10	8/1/00	—	ND	ND	—	ND	—	36	—	11	—	0.89	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
RW-SED-01	0-2	8/11/00	ND	3.8	11	ND	ND	ND	ND	ND	ND	0.25
RW-SED-01	4-6	8/11/00	ND	1.5	8.3	ND	ND	ND	ND	ND	ND	0.33
RW-SED-01	6-8	8/11/00	ND	1.8	8.3	ND	ND	ND	ND	ND	ND	ND
RW-SED-02	2-4	8/11/00	ND	1.8	10	ND	ND	ND	ND	ND	ND	ND
RW-SED-02	4-6	8/11/00	ND	1.0	2.3	ND	ND	ND	ND	ND	ND	ND
RW-SED-02	8-10	8/11/00	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	0-2	8/16/00	ND	10	13	ND	ND	0.1	ND	0.1	ND	0.36
RW-SED-03	6-8	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	10-12	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-04	0-2	8/10/00	1.0	5.8	17	ND	ND	ND	ND	0.17	ND	0.88
RW-SED-04	4-6	8/10/00	1.4	5.2	16	ND	ND	0.11	ND	0.11	ND	0.81
RW-SED-04	12-14	8/10/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	0-2	8/14/00	1.8	5.0	17	ND	ND	0.27	ND	ND	ND	0.5
RW-SED-05	4-6	8/14/00	ND	ND	5.7	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	6-8	8/14/00	ND	1.1	7.8	ND	ND	ND	ND	ND	ND	ND
RW-SED-06	0-2	8/14/00	2.6	11	29	ND	ND	ND	ND	0.11	0.12	0.91
RW-SED-06	4-6	8/14/00	ND	ND	5.6	ND	ND	ND	ND	ND	ND	ND
RW-SED-06	8-10	8/14/00	ND	ND	5.0	ND	ND	ND	ND	ND	ND	0.12
RW-SED-07	0-2	8/17/00	ND	6.2	14	ND	ND	0.13	ND	ND	ND	0.66
RW-SED-07	4-6	8/17/00	ND	2.0	12	ND	ND	ND	ND	ND	ND	0.27
RW-SED-07	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	3.4	8.1	12	ND	ND	ND	ND	0.12	ND	0.35
RW-SED-08	2-4	8/18/00	4.0	9.8	14	ND	ND	ND	ND	0.32	0.12	0.27
RW-SED-08	4-6	8/18/00	ND	3.0	10	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	2-4	8/17/00	ND	6.6	35	ND	ND	0.13	ND	0.31	0.15	1.4
RW-SED-09	6-8	8/17/00	ND	1.9	16	ND	ND	0.12	ND	0.1	ND	0.32
RW-SED-09	10-12	8/17/00	ND	2.2	11	ND	ND	0.13	ND	ND	ND	0.43
RW-SED-11	0-2	10/19/00	ND	4.7	14	ND	ND	ND	ND	ND	ND	0.25
RW-SED-12	0-2	10/19/00	ND	5.8	10	ND	ND	ND	ND	0.14	ND	0.57
RW-SED-13	0-2	10/19/00	ND	6.3	13	ND	ND	ND	ND	ND	ND	0.28
RW-SED-16	0-2	10/19/00	4.1	16	26	ND	ND	ND	ND	0.14	0.12	0.62

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
RW-SED-17	0-2	10/19/00	ND	4.5	14	ND	ND	ND	ND	0.12	ND	0.34
RW-SED-18	0-2	10/19/00	ND	5.2	15	ND	ND	ND	ND	0.10	ND	0.33
RW-SED-19	0-2	8/31/00	ND	12	ND	ND	ND	0.3	ND	0.12	0.1	0.82
RW-SED-19	2-4	8/31/00	ND	7.5	ND	ND	ND	0.27	ND	0.1	ND	0.88
RW-SED-19	4-6	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.20
RW-SED-20	0-2	8/31/00	ND	7.3	ND	ND	ND	0.22	ND	0.14	ND	0.82
RW-SED-20	2-4	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15
RW-SED-21	0-2	8/31/00	ND	13	ND	ND	ND	0.36	ND	0.2	0.11	1.7
RW-SED-21	2-4	8/31/00	ND	3.1	ND	ND	ND	ND	ND	ND	ND	0.55
RW-SED-22	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13
RW-SED-22	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	0-2	8/30/00	ND	1.0	ND	ND	ND	ND	ND	ND	ND	0.11
RW-SED-23	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15
RW-SED-23	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-24	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32
RW-SED-24	4-6*	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-25	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-25	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-26	0-2	8/30/00	ND	1.62	ND	ND	ND	0.13	ND	ND	ND	0.27
RW-SED-26	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-27	0-2	8/30/00	ND	ND	ND	ND	ND	0.1	ND	ND	ND	0.19
RW-SED-27	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11
RW-SED-28	0-2	8/30/00	ND	2.0	2.9	ND	ND	ND	ND	ND	ND	0.2
RW-SED-28	2-4*	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06
RW-SED-28	4-6	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-29	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.29
RW-SED-29	2-4	8/30/00	ND	1.0	ND	ND	ND	ND	ND	ND	ND	0.21
RW-SED-30	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-30	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-30	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
RW-SED-31	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18
RW-SED-31	4-6	8/30/00	ND	ND	ND	ND	ND	0.1	ND	ND	ND	0.2
RW-SED-32	0-2*	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.105
RW-SED-32	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15
RW-SED-33	0-2	8/30/00	ND	1.6	ND	ND	ND	0.15	ND	ND	ND	0.37
RW-SED-33	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18
RW-SED-34	0-2	8/28/00	ND	3.0	12.5	ND	ND	ND	ND	0.21	0.10	0.16
RW-SED-34	2-4	8/28/00	ND	ND	3.9	ND	ND	ND	ND	ND	ND	ND
RW-SED-35	0-2	8/28/00	ND	ND	2.6	ND	ND	ND	ND	ND	ND	0.19
RW-SED-35	4-6	8/28/00	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND
RW-SED-36	0-2	8/28/00	ND	ND	5.8	ND	ND	ND	ND	ND	ND	0.14
RW-SED-36	2-4	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-37	0-2	8/28/00	ND	1.3	11	ND	ND	ND	ND	ND	ND	0.21
RW-SED-37	2-4	8/28/00	ND	ND	8.1	ND	ND	ND	ND	ND	ND	0.38
RW-SED-38	0-2	8/28/00	ND	ND	4.4	ND	ND	ND	ND	ND	ND	0.13
RW-SED-38	2-4	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-38	4-6	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-39	0-2	8/25/00	ND	ND	3.0	ND	ND	ND	ND	ND	ND	0.12
RW-SED-39	4-6	8/25/00	ND	ND	6.0	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
RW-SED-01	0-2	8/11/00	420	524	ND	ND	3.18	ND	6.13	14.2	12.2	13	10.3	9.36	18.2	2.59
RW-SED-01	4-6	8/11/00	105	ND	ND	ND	0.63	ND	1.31	2.66	2.3	2.1	1.4	1.7	3.1	ND
RW-SED-01	6-8	8/11/00	ND	ND	ND	ND	ND	ND	0.53	0.85	ND	0.8	ND	0.55	1.06	ND
RW-SED-02	2-4	8/11/00	ND	141	ND	ND	ND	ND	0.81	1.9	1.84	1.65	1.48	1.5	2.26	ND
RW-SED-02	4-6	8/11/00	ND	ND	ND	ND	ND	ND	1.31	2.93	ND	2.86	2.07	1.95	3.5	ND
RW-SED-02	8-10	8/11/00	ND	ND	ND	ND	ND	ND	0.75	1.35	1.27	1.35	1.11	1.09	1.74	ND
RW-SED-03	0-2	8/16/00	ND	ND	ND	ND	ND	ND	1.02	1.56	1.49	1.43	1.77	1.1	1.82	ND
RW-SED-03	6-8	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	10-12	8/16/00	ND	428	1100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-04	0-2	8/10/00	725	1090	250	0.84	1.58	ND	3.37	10.9	10.2	10.7	20.3	7.79	13.2	2.02
RW-SED-04	4-6	8/10/00	1230	1570	320	1.64	1.8	ND	2.86	10.1	8.06	8.96	9.88	6.97	12.8	1.93
RW-SED-04	12-14	8/10/00	ND	206	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	0-2	8/14/00	836	1020	130	ND	1.31	ND	2.8	9.38	9.02	8.6	8.63	6.31	12.7	1.81
RW-SED-05	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-06	0-2	8/14/00	472	915	470	2.48	1.7	ND	2.08	6.56	1.36	7.02	10.3	4.23	8.46	1.36
RW-SED-06	4-6	8/14/00	223	309	100	0.94	1.2	ND	2.26	5.12	4.87	4.7	4.24	3.47	6.51	0.89
RW-SED-06	8-10	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	0-2	8/17/00	199	385	110	ND	ND	ND	0.91	4.27	3.7	3.72	3.75	2.71	4.79	0.56
RW-SED-07	4-6	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	ND	ND	ND	ND	ND	ND	ND	1.33	1.04	1.09	1.5	0.77	1.63	ND
RW-SED-08	2-4	8/18/00	ND	138	ND	ND	ND	ND	0.62	2.22	1.99	1.86	2.29	1.53	2.77	0.3
RW-SED-08	4-6	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	2-4	8/17/00	897	1490	820	ND	ND	ND	0.81	3.06	3.13	2.72	5.56	2.22	4.46	ND
RW-SED-09	6-8	8/17/00	252	227	ND	ND	ND	ND	0.95	3.47	3.41	3.29	2.38	2.62	4.66	0.58
RW-SED-09	10-12	8/17/00	258	216	ND	ND	ND	ND	1.13	3.75	3.78	3.75	2.96	2.68	4.99	0.67
RW-SED-11	0-2	10/19/00	400	1700	400	ND	0.53	ND	1.7	4.9	4.6	3.7	6.9	3.7	6.0	1.1
RW-SED-12	0-2	10/19/00	380	1200	220	ND	ND	ND	1.8	4.5	4.2	4.4	6.0	3.4	5.8	0.92
RW-SED-13	0-2	10/19/00	780	1400	1200	1.6	0.72	ND	2.4	7.1	6.4	5.4	15	5.3	8.9	1.4
RW-SED-16	0-2	10/19/00	860	3100	1400	2.2	ND	ND	2.5	6.6	6.5	7.0	22	5.2	8.9	1.4

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
RW-SED-17	0-2	10/19/00	540	1400	380	ND	ND	ND	2.4	7.6	5.6	5.7	11	4.6	8.0	1.1
RW-SED-18	0-2	10/19/00	730	2000	610	1.7	3.8	0.72	7.2	20	20	22	18	13	25	4.3
RW-SED-19	0-2	8/31/00	830	1300	120	2.3	5.6	ND	11	30	20	28	20	17	36	5.5
RW-SED-19	2-4	8/31/00	1000	1500	160	2.7	5.6	ND	9.7	29	21	30	21	18	37	21
RW-SED-19	4-6	8/31/00	210	130	ND	ND	ND	ND	1.5	5.9	1.4	6.5	5.0	3.7	7.2	1.4
RW-SED-20	0-2	8/31/00	700	1400	160	2.1	3.2	0.64	4.7	17	17	19	14	11	23	3.2
RW-SED-20	2-4	8/31/00	ND	ND	ND	ND	ND	ND	ND	1.3	1.2	1.1	1.6	0.81	1.7	ND
RW-SED-21	0-2	8/31/00	1100	2000	320	1.6	2.0	ND	3.7	17	17	17	19	12	23	ND
RW-SED-21	2-4	8/31/00	160	220	ND	ND	ND	ND	0.92	2.6	2.4	2.3	2.8	1.7	3.2	0.51
RW-SED-22	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-22	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	0.68	ND	0.62	0.94	ND	0.82	ND
RW-SED-23	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-24	0-2	8/30/00	128	127	ND	ND	ND	ND	0.76	3.78	3.38	3.31	2.86	2.64	4.56	0.69
RW-SED-24	4-6*	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-25	0-2	8/30/00	ND	131	ND	ND	ND	ND	ND	1.09	0.96	ND	1.53	ND	1.32	ND
RW-SED-25	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-26	0-2	8/30/00	268	480	130	ND	ND	ND	0.81	4.02	2.98	3.17	4.17	2.57	5.57	0.57
RW-SED-26	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-27	0-2	8/30/00	1460	1120	560	ND	0.79	ND	1.11	4.72	3.91	ND	9.05	ND	8.01	ND
RW-SED-27	2-4	8/30/00	329	399	130	ND	ND	ND	0.79	3.72	2.72	ND	3.88	ND	4.52	ND
RW-SED-28	0-2	8/30/00	165	379	140	ND	ND	ND	0.5	1.91	1.78	1.98	1.5	1.18	2.62	ND
RW-SED-28	2-4*	8/30/00	133	360.5	ND	ND	ND	ND	0.29	2.215	2.02	2.255	1.815	1.445	2.895	0.25
RW-SED-28	4-6	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-29	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-29	2-4	8/30/00	299	550	300	ND	ND	ND	0.57	2.1	1.91	1.95	2.08	1.31	2.81	ND
RW-SED-30	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-30	2-4	8/30/00	129	224	ND	ND	ND	ND	ND	1.21	1.03	1.17	7.9	0.87	1.44	ND
RW-SED-30	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.24	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
RW-SED-31	2-4	8/30/00	277	629	130	ND	ND	ND	ND	2.31	2.12	ND	3.63	ND	3.25	0.5
RW-SED-31	4-6	8/30/00	ND	138	ND	ND	ND	ND	ND	1	0.75	0.87	0.9	0.5	1.23	ND
RW-SED-32	0-2*	8/30/00	69.5	104.5	ND	ND	ND	ND	ND	0.685	0.61	0.61	1	0.525	0.925	ND
RW-SED-32	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-33	0-2	8/30/00	1290	2360	1300	ND	ND	ND	1.27	6.39	7.17	7.25	10.9	4.68	9.39	ND
RW-SED-33	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-34	0-2	8/28/00	110	2820	650	1.94	1.5	ND	2.16	13.5	11.7	13.9	16.1	8.32	17.3	ND
RW-SED-34	2-4	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-35	0-2	8/28/00	1440	4920	1400	3.35	2.03	ND	2.36	11.4	11.9	11	19.4	9.89	16.6	ND
RW-SED-35	4-6	8/28/00	149	222	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-36	0-2	8/28/00	1210	2820	400	1.47	1.52	ND	2.63	14	14.2	14.1	17.7	11.6	19.5	ND
RW-SED-36	2-4	8/28/00	ND	177	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-37	0-2	8/28/00	971	1030	1300	ND	ND	ND	1.02	3.9	4.16	4.9	6.52	3.51	5.54	0.83
RW-SED-37	2-4	8/28/00	384	951	170	ND	ND	ND	0.77	4.12	3.89	4.16	6.33	2.46	5.8	0.86
RW-SED-38	0-2	8/28/00	550	2070	340	ND	ND	ND	1.26	5.28	5.7	6.07	8.61	4.29	7.71	1.15
RW-SED-38	2-4	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-38	4-6	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-39	0-2	8/25/00	772	522	200	ND	ND	ND	0.87	3.54	2.73	2.97	ND	2.54	4.47	ND
RW-SED-39	4-6	8/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
RW-SED-01	0-2	8/11/00	33.34	3.66	8.29	0.88	30.9	27.2
RW-SED-01	4-6	8/11/00	5.7	0.62	1.3	ND	5.2	5.3
RW-SED-01	6-8	8/11/00	2.0	ND	ND	ND	1.09	1.53
RW-SED-02	2-4	8/11/00	3.9	ND	1.2	ND	2.1	3.15
RW-SED-02	4-6	8/11/00	7.09	ND	1.68	ND	4.97	5.81
RW-SED-02	8-10	8/11/00	3.46	ND	0.82	ND	2.22	2.7
RW-SED-03	0-2	8/16/00	3.63	ND	0.96	ND	2.19	2.87
RW-SED-03	6-8	8/16/00	ND	ND	ND	ND	ND	ND
RW-SED-03	10-12	8/16/00	ND	ND	ND	ND	ND	ND
RW-SED-04	0-2	8/10/00	23.6	1.65	6.69	1.31	15.5	19.2
RW-SED-04	4-6	8/10/00	18.8	2.31	6.3	1.01	12.4	17.2
RW-SED-04	12-14	8/10/00	ND	ND	ND	ND	ND	ND
RW-SED-05	0-2	8/14/00	18.9	1.8	6.53	ND	11.4	17.7
RW-SED-05	4-6	8/14/00	ND	ND	ND	ND	ND	ND
RW-SED-05	6-8	8/14/00	ND	ND	ND	ND	ND	ND
RW-SED-06	0-2	8/14/00	14.6	1.82	4.46	ND	10.2	11.9
RW-SED-06	4-6	8/14/00	12.1	1.25	3.17	ND	9.49	10.1
RW-SED-06	8-10	8/14/00	ND	ND	ND	ND	ND	ND
RW-SED-07	0-2	8/17/00	8.29	ND	2.33	ND	5.15	7.1
RW-SED-07	4-6	8/17/00	ND	ND	ND	ND	ND	ND
RW-SED-07	6-8	8/17/00	ND	ND	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	2.45	ND	0.6	ND	1.18	2.09
RW-SED-08	2-4	8/18/00	4.76	ND	1.16	ND	2.72	4.05
RW-SED-08	4-6	8/18/00	ND	ND	ND	ND	ND	ND
RW-SED-09	2-4	8/17/00	5.84	ND	ND	ND	3.37	5.51
RW-SED-09	6-8	8/17/00	8.35	ND	2.23	ND	4.12	7.09
RW-SED-09	10-12	8/17/00	9.07	0.76	2.43	ND	4.85	7.69
RW-SED-11	0-2	10/19/00	8.4	0.74	3.4	ND	4.6	8.0
RW-SED-12	0-2	10/19/00	7.7	ND	3.1	ND	3.4	7.5
RW-SED-13	0-2	10/19/00	12	0.87	4.4	ND	5.6	12
RW-SED-16	0-2	10/19/00	14	0.98	4.9	0.54	8.3	13

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
RW-SED-17	0-2	10/19/00	12	0.81	4.2	ND	5.9	11
RW-SED-18	0-2	10/19/00	46	3.8	14	2.0	36	38
RW-SED-19	0-2	8/31/00	65	5.8	18	0.82	52	50
RW-SED-19	2-4	8/31/00	66	5.7	20	0.88	52	54
RW-SED-19	4-6	8/31/00	16	ND	4.9	ND	ND	12
RW-SED-20	0-2	8/31/00	40	3.9	12	0.52	34	35
RW-SED-20	2-4	8/31/00	2.5	ND	ND	ND	1.3	2.1
RW-SED-21	0-2	8/31/00	34	3.2	13	1.1	18	30
RW-SED-21	2-4	8/31/00	5.6	ND	2.0	ND	3.4	4.7
RW-SED-22	0-2	8/30/00	1.38	ND	ND	ND	ND	1.25
RW-SED-22	2-4	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-23	0-2	8/30/00	1.28	ND	ND	ND	0.61	1.11
RW-SED-23	2-4	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-23	6-8	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-24	0-2	8/30/00	6.39	ND	2.13	ND	1.5	5.47
RW-SED-24	4-6*	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-25	0-2	8/30/00	2.18	ND	0.65	ND	1.18	1.94
RW-SED-25	2-4	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-26	0-2	8/30/00	7	ND	2.15	ND	3.74	6.73
RW-SED-26	2-4	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-27	0-2	8/30/00	9.35	1.19	2.34	ND	5.15	8.8
RW-SED-27	2-4	8/30/00	6.52	ND	1.75	ND	3.65	5.97
RW-SED-28	0-2	8/30/00	4.01	ND	1.17	ND	1.95	3.68
RW-SED-28	2-4*	8/30/00	4.48	ND	1.305	ND	1.89	4.005
RW-SED-28	4-6	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-29	0-2	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-29	2-4	8/30/00	4.32	ND	1.25	ND	2.66	3.9
RW-SED-30	0-2	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-30	2-4	8/30/00	2.04	ND	ND	ND	ND	2
RW-SED-30	6-8	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-31	0-2	8/30/00	1.18	ND	ND	ND	ND	1.12

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
RW-SED-31	2-4	8/30/00	4.13	ND	1.47	ND	2.12	4.07
RW-SED-31	4-6	8/30/00	1.6	ND	0.55	ND	ND	1.56
RW-SED-32	0-2*	8/30/00	1.375	ND	ND	ND	0.65	1.29
RW-SED-32	2-4	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-33	0-2	8/30/00	12.5	ND	5.31	ND	5.42	11.9
RW-SED-33	2-4	8/30/00	ND	ND	ND	ND	ND	ND
RW-SED-34	0-2	8/28/00	20.8	2.13	9.55	ND	10.2	19
RW-SED-34	2-4	8/28/00	ND	ND	ND	ND	ND	ND
RW-SED-35	0-2	8/28/00	21.9	1.67	9.63	0.78	11.5	20.1
RW-SED-35	4-6	8/28/00	ND	ND	ND	ND	ND	ND
RW-SED-36	0-2	8/28/00	25	2.4	10.6	1.03	13	23.2
RW-SED-36	2-4	8/28/00	ND	ND	ND	ND	ND	ND
RW-SED-37	0-2	8/28/00	8.41	ND	2.99	ND	4.44	8.3
RW-SED-37	2-4	8/28/00	7.51	ND	2.75	ND	3.63	6.8
RW-SED-38	0-2	8/28/00	10.6	1.1	4.16	ND	6.07	10.5
RW-SED-38	2-4	8/28/00	1.13	ND	ND	ND	ND	1.09
RW-SED-38	4-6	8/28/00	ND	ND	ND	ND	ND	ND
RW-SED-39	0-2	8/25/00	5.58	ND	1.78	ND	2.52	5.52
RW-SED-39	4-6	8/25/00	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
RW-SED-01	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-01	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-01	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-02	2-4	8/11/00	---	---	---	---	---	---	---
RW-SED-02	4-6	8/11/00	---	---	---	---	---	---	---
RW-SED-02	8-10	8/11/00	---	---	---	---	---	---	---
RW-SED-03	0-2	8/16/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	6-8	8/16/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	10-12	8/16/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-04	0-2	8/10/00	---	---	---	---	---	---	---
RW-SED-04	4-6	8/10/00	---	---	---	---	---	---	---
RW-SED-04	12-14	8/10/00	---	---	---	---	---	---	---
RW-SED-05	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-06	0-2	8/14/00	---	---	---	---	---	---	---
RW-SED-06	4-6	8/14/00	---	---	---	---	---	---	---
RW-SED-06	8-10	8/14/00	---	---	---	---	---	---	---
RW-SED-07	0-2	8/17/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	4-6	8/17/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	---	---	---	---	---	---	---
RW-SED-08	2-4	8/18/00	---	---	---	---	---	---	---
RW-SED-08	4-6	8/18/00	---	---	---	---	---	---	---
RW-SED-09	2-4	8/17/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	10-12	8/17/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-11	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-12	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-13	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-16	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-17	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-18	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-19	0-2	8/31/00	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
RW-SED-19	2-4	8/31/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-19	4-6	8/31/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-20	0-2	8/31/00	---	---	---	---	---	---	---
RW-SED-20	2-4	8/31/00	---	---	---	---	---	---	---
RW-SED-21	0-2	8/31/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-21	2-4	8/31/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-22	0-2	8/30/00	---	---	---	---	---	---	---
RW-SED-22	2-4	8/30/00	---	---	---	---	---	---	---
RW-SED-23	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-24	0-2	8/30/00	---	---	---	---	---	---	---
RW-SED-24	4-6	8/30/00	---	---	---	---	---	---	---
RW-SED-25	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-25	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-26	0-2	8/30/00	---	---	---	---	---	---	---
RW-SED-26	2-4	8/30/00	---	---	---	---	---	---	---
RW-SED-27	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-27	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-28	0-2	8/30/00	---	---	---	---	---	---	---
RW-SED-28	2-4	8/30/00	---	---	---	---	---	---	---
RW-SED-28	4-6	8/30/00	---	---	---	---	---	---	---
RW-SED-29	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-29	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-30	0-2	8/30/00	---	---	---	---	---	---	---
RW-SED-30	2-4	8/30/00	---	---	---	---	---	---	---
RW-SED-30	6-8	8/30/00	---	---	---	---	---	---	---
RW-SED-31	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	4-6	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-32	0-2	8/30/00	---	---	---	---	---	---	---
RW-SED-32	2-4	8/30/00	---	---	---	---	---	---	---
RW-SED-33	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-33	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
RW-SED-34	0-2	8/28/00	---	---	---	---	---	---	---
RW-SED-34	2-4	8/28/00	---	---	---	---	---	---	---
RW-SED-35	0-2	8/28/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-35	4-6	8/28/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-36	0-2	8/28/00	---	---	---	---	---	---	---
RW-SED-36	2-4	8/28/00	---	---	---	---	---	---	---
RW-SED-37	0-2	8/28/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-37	2-4	8/28/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-38	0-2	8/28/00	---	---	---	---	---	---	---
RW-SED-38	2-4	8/28/00	---	---	---	---	---	---	---
RW-SED-38	4-6	8/28/00	---	---	---	---	---	---	---
RW-SED-39	0-2	8/25/00	ND	ND	ND	ND	ND	ND	ND
RW-SED-39	4-6	8/25/00	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin
RW-SED-01	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-01	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-01	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-02	2-4	8/11/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-02	4-6	8/11/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-02	8-10	8/11/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-03	0-2	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	6-8	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	10-12	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-04	0-2	8/10/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-04	4-6	8/10/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-04	12-14	8/10/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-05	0-2	8/14/00	1.97	ND	0.18	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	6-8	8/14/00	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-06	0-2	8/14/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-06	4-6	8/14/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-06	8-10	8/14/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-07	0-2	8/17/00	2.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	4-6	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-08	2-4	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-08	4-6	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-09	2-4	8/17/00	1.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	10-12	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-11	0-2	10/19/00	210	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-12	0-2	10/19/00	240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-13	0-2	10/19/00	78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-16	0-2	10/19/00	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-17	0-2	10/19/00	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-18	0-2	10/19/00	240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-19	0-2	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin
RW-SED-19	2-4	8/31/00	0.57	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-19	4-6	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-20	0-2	8/31/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-20	2-4	8/31/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-21	0-2	8/31/00	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-21	2-4	8/31/00	0.099	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-22	0-2	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-22	2-4	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-23	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-24	0-2	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-24	4-6	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-25	0-2	8/30/00	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-25	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-26	0-2	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-26	2-4	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-27	0-2	8/30/00	2.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-27	2-4	8/30/00	0.913	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-28	0-2	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-28	2-4	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-28	4-6	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-29	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-29	2-4	8/30/00	1.18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-30	0-2	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-30	2-4	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-30	6-8	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-31	0-2	8/30/00	0.0999	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	2-4	8/30/00	1.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	4-6	8/30/00	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-32	0-2	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-32	2-4	8/30/00	---	---	---	---	---	---	---	---	---	---	---	---
RW-SED-33	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-33	2-4	8/30/00	0.0461	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin
RW-SED-34	0-2	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-34	2-4	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-35	0-2	8/28/00	4.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-35	4-6	8/28/00	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-36	0-2	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-36	2-4	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-37	0-2	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-37	2-4	8/28/00	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-38	0-2	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-38	2-4	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-38	4-6	8/28/00	—	—	—	—	—	—	—	—	—	—	—	—
RW-SED-39	0-2	8/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-39	4-6	8/25/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin aldehyde	Endrin ketone	gamma-BHC	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Chlordane
RW-SED-01	0-2	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-01	4-6	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-01	6-8	8/11/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-02	2-4	8/11/00	—	—	—	—	—	—	—	—
RW-SED-02	4-6	8/11/00	—	—	—	—	—	—	—	—
RW-SED-02	8-10	8/11/00	—	—	—	—	—	—	—	—
RW-SED-03	0-2	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	6-8	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-03	10-12	8/16/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-04	0-2	8/10/00	—	—	—	—	—	—	—	—
RW-SED-04	4-6	8/10/00	—	—	—	—	—	—	—	—
RW-SED-04	12-14	8/10/00	—	—	—	—	—	—	—	—
RW-SED-05	0-2	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	4-6	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-05	6-8	8/14/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-06	0-2	8/14/00	—	—	—	—	—	—	—	—
RW-SED-06	4-6	8/14/00	—	—	—	—	—	—	—	—
RW-SED-06	8-10	8/14/00	—	—	—	—	—	—	—	—
RW-SED-07	0-2	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	4-6	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-07	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	—	—	—	—	—	—	—	—
RW-SED-08	2-4	8/18/00	—	—	—	—	—	—	—	—
RW-SED-08	4-6	8/18/00	—	—	—	—	—	—	—	—
RW-SED-09	2-4	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	6-8	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-09	10-12	8/17/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-11	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-12	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-13	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-16	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-17	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-18	0-2	10/19/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-19	0-2	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin aldehyde	Endrin ketone	gamma-BHC	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Chlordane
RW-SED-19	2-4	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-19	4-6	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-20	0-2	8/31/00	—	—	—	—	—	—	—	—
RW-SED-20	2-4	8/31/00	—	—	—	—	—	—	—	—
RW-SED-21	0-2	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-21	2-4	8/31/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-22	0-2	8/30/00	—	—	—	—	—	—	—	—
RW-SED-22	2-4	8/30/00	—	—	—	—	—	—	—	—
RW-SED-23	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-23	6-8	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-24	0-2	8/30/00	—	—	—	—	—	—	—	—
RW-SED-24	4-6	8/30/00	—	—	—	—	—	—	—	—
RW-SED-25	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-25	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-26	0-2	8/30/00	—	—	—	—	—	—	—	—
RW-SED-26	2-4	8/30/00	—	—	—	—	—	—	—	—
RW-SED-27	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-27	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-28	0-2	8/30/00	—	—	—	—	—	—	—	—
RW-SED-28	2-4	8/30/00	—	—	—	—	—	—	—	—
RW-SED-28	4-6	8/30/00	—	—	—	—	—	—	—	—
RW-SED-29	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-29	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-30	0-2	8/30/00	—	—	—	—	—	—	—	—
RW-SED-30	2-4	8/30/00	—	—	—	—	—	—	—	—
RW-SED-30	6-8	8/30/00	—	—	—	—	—	—	—	—
RW-SED-31	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-31	4-6	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-32	0-2	8/30/00	—	—	—	—	—	—	—	—
RW-SED-32	2-4	8/30/00	—	—	—	—	—	—	—	—
RW-SED-33	0-2	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-33	2-4	8/30/00	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin aldehyde	Endrin ketone	gamma-BHC	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Chlordane
RW-SED-34	0-2	8/28/00	—	—	—	—	—	—	—	—
RW-SED-34	2-4	8/28/00	—	—	—	—	—	—	—	—
RW-SED-35	0-2	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-35	4-6	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-36	0-2	8/28/00	—	—	—	—	—	—	—	—
RW-SED-36	2-4	8/28/00	—	—	—	—	—	—	—	—
RW-SED-37	0-2	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-37	2-4	8/28/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-38	0-2	8/28/00	—	—	—	—	—	—	—	—
RW-SED-38	2-4	8/28/00	—	—	—	—	—	—	—	—
RW-SED-38	4-6	8/28/00	—	—	—	—	—	—	—	—
RW-SED-39	0-2	8/25/00	ND	ND	ND	ND	ND	ND	ND	ND
RW-SED-39	4-6	8/25/00	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	Mercury	Selenium	Silver
RW-SED-01	0-2	8/11/00	ND	18.9	1.36	---	25.4	1.46	237	0.95	ND	1.43
RW-SED-01	4-6	8/11/00	8.9	46	0.77	---	14	1.1	110	ND	ND	ND
RW-SED-01	6-8	8/11/00	44.8	16.1	ND	---	6.29	---	9.94	ND	ND	ND
RW-SED-02	2-4	8/11/00	ND	ND	ND	---	11.3	0.71	121	0.093	ND	ND
RW-SED-02	4-6	8/11/00	ND	28.4	ND	---	8.8	---	46.5	ND	ND	ND
RW-SED-02	8-10	8/11/00	ND	780	ND	---	10.8	ND	283	ND	ND	ND
RW-SED-03	0-2	8/16/00	89.2	39.3	16.8	---	ND	ND	143	ND	ND	ND
RW-SED-03	6-8	8/16/00	25.8	31	ND	---	8.14	---	31.7	ND	ND	ND
RW-SED-03	10-12	8/16/00	7.96	14.8	ND	---	11	---	10.7	ND	ND	ND
RW-SED-04	0-2	8/10/00	ND	79.9	2.28	---	46.2	0.546	384	0.44	ND	1.45
RW-SED-04	4-6	8/10/00	16	106	2.43	---	26	1.29	440	0.86	ND	0.773
RW-SED-04	12-14	8/10/00	ND	ND	ND	---	8.4	---	3.66	ND	ND	ND
RW-SED-05	0-2	8/14/00	33.9	141	3.36	---	31.3	0.71	534	0.59	ND	ND
RW-SED-05	4-6	8/14/00	ND	ND	ND	---	12.2	---	8.08	ND	ND	ND
RW-SED-05	6-8	8/14/00	ND	ND	ND	---	8.67	---	10.7	ND	ND	ND
RW-SED-06	0-2	8/14/00	ND	98.5	3.53	---	61.1	0.741	795	0.88	ND	1.81
RW-SED-06	4-6	8/14/00	18.9	86	2.53	---	30.9	0.624	381	0.63	ND	ND
RW-SED-06	8-10	8/14/00	ND	ND	ND	---	7.75	---	5.77	ND	ND	ND
RW-SED-07	0-2	8/17/00	22.2	72	2.99	---	29.8	1.09	582	0.99	ND	ND
RW-SED-07	4-6	8/17/00	ND	15.8	ND	---	14.9	---	24.6	ND	ND	ND
RW-SED-07	6-8	8/17/00	ND	10.4	ND	---	12.3	---	ND	ND	ND	ND
RW-SED-08	0-2	8/18/00	ND	16.4	0.623	---	11.3	---	32.5	ND	ND	ND
RW-SED-08	2-4	8/18/00	ND	24.4	0.876	---	15.7	---	87.6	0.11	ND	ND
RW-SED-08	4-6	8/18/00	ND	ND	ND	---	11.4	---	6.96	ND	ND	ND
RW-SED-09	2-4	8/17/00	ND	190	6.6	---	162	1.85	1320	1.1	ND	2.8
RW-SED-09	6-8	8/17/00	30.2	115	2.32	---	23.5	0.669	377	0.89	ND	ND
RW-SED-09	10-12	8/17/00	ND	74	1.27	---	16.3	0.634	208	0.85	ND	ND
RW-SED-11	0-2	10/19/00	ND	53	1.9	---	28	2.0	330	0.50	ND	ND
RW-SED-12	0-2	10/19/00	ND	39	1.9	---	34	1.1	370	0.34	ND	ND
RW-SED-13	0-2	10/19/00	15	82	3.1	---	56	2.2	540	0.77	ND	1.0
RW-SED-16	0-2	10/19/00	19	140	5.5	ND	110	0.55	980	0.53	ND	2.0
RW-SED-17	0-2	10/19/00	14	51	2.2	---	45	---	83	ND	ND	ND
RW-SED-18	0-2	10/19/00	26	90	2.8	---	34	2.8	580	3.3	ND	1.8

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	Mercury	Selenium	Silver
RW-SED-19	0-2	8/31/00	ND	71	1.8	---	31	1.5	420	0.55	ND	ND
RW-SED-19	2-4	8/31/00	12	110	3.0	---	59	0.82	840	1.2	ND	1.5
RW-SED-19	4-6	8/31/00	ND	43	ND	---	42	---	15	0.37	ND	ND
RW-SED-20	0-2	8/31/00	ND	83	2.7	---	44	1.7	650	0.96	ND	ND
RW-SED-20	2-4	8/31/00	ND	87	1.3	---	31	ND	110	1.1	ND	ND
RW-SED-21	0-2	8/31/00	30	160	4.1	---	43	1.4	780	1.6	ND	1.3
RW-SED-21	2-4	8/31/00	18	82	2.1	---	45	ND	260	0.24	ND	ND
RW-SED-22	0-2	8/30/00	23.2	158	2.29	---	38.6	ND	358	3.3	ND	ND
RW-SED-22	2-4	8/30/00	25.4	41.1	1.57	---	42.7	---	37.7	ND	ND	ND
RW-SED-23	0-2	8/30/00	ND	ND	ND	---	8.61	---	35.3	ND	ND	ND
RW-SED-23	2-4	8/30/00	ND	22.3	ND	---	19	---	27.4	ND	ND	ND
RW-SED-23	6-8	8/30/00	13.8	22.6	ND	---	21.1	---	14.3	ND	ND	ND
RW-SED-24	0-2	8/30/00	25.1	64.9	1.69	---	25.2	0.589	218	0.734	ND	ND
RW-SED-24	4-6*	8/30/00	13.3	ND	ND	---	18.4	---	15.4	0.1565	ND	ND
RW-SED-25	0-2	8/30/00	12.6	36.2	1.17	---	17.6	---	94.5	0.17	ND	ND
RW-SED-25	2-4	8/30/00	20.6	44.1	1.69	---	37.7	---	27.1	ND	ND	ND
RW-SED-26	0-2	8/30/00	40.1	163	5.93	---	64.4	1.37	1030	1.98	ND	1.66
RW-SED-26	2-4	8/30/00	28.2	76.2	1.75	---	45.5	---	33.3	ND	ND	ND
RW-SED-27	0-2	8/30/00	37.6	141	4.84	---	52.6	1.12	836	1.23	ND	1.43
RW-SED-27	2-4	8/30/00	38.1	132	4.95	---	38.8	0.771	766	1.12	ND	1.31
RW-SED-28	0-2	8/30/00	47.4	251	ND	---	93.3	2.35	977	1.76	ND	ND
RW-SED-28	2-4*	8/30/00	49.65	211	ND	---	76.25	1.6	846.5	1.675	ND	ND
RW-SED-28	4-6	8/30/00	ND	ND	ND	---	19	2.32	11.6	ND	ND	ND
RW-SED-29	0-2	8/30/00	ND	ND	ND	---	31.4	---	40.2	ND	ND	ND
RW-SED-29	2-4	8/30/00	23.8	205	ND	ND	117	2.32	1620	1.87	ND	ND
RW-SED-30	0-2	8/30/00	ND	ND	ND	---	22.6	---	43.4	ND	ND	ND
RW-SED-30	2-4	8/30/00	ND	ND	ND	---	13.2	---	32.2	ND	ND	ND
RW-SED-30	6-8	8/30/00	ND	ND	ND	---	10.4	---	28.8	ND	ND	ND
RW-SED-31	0-2	8/30/00	ND	74	ND	---	38.9	ND	276	0.301	ND	ND
RW-SED-31	2-4	8/30/00	27.5	133	ND	---	64.4	1.15	844	1.53	ND	ND
RW-SED-31	4-6	8/30/00	ND	66.2	ND	---	40.8	ND	391	0.869	ND	ND
RW-SED-32	0-2*	8/30/00	28.6	101.85	ND	---	43.65	ND	321.5	0.51	ND	ND
RW-SED-32	2-4	8/30/00	28.4	42.1	ND	---	37.5	---	54.4	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
RIVERWAY
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	Mercury	Selenium	Silver
RW-SED-33	0-2	8/30/00	ND	233	ND	ND	114	0.606	845	1.82	ND	ND
RW-SED-33	2-4	8/30/00	ND	45.6	ND	---	43.1	---	94.4	ND	ND	ND
RW-SED-34	0-2	8/28/00	65.4	245	8.04	---	76.8	1.8	1250	1.6	ND	2.64
RW-SED-34	2-4	8/28/00	ND	35.6	ND	---	31.9	---	45.7	ND	ND	ND
RW-SED-35	0-2	8/28/00	ND	237	11.6	ND	161	2.2	2050	1.6	ND	2.46
RW-SED-35	4-6	8/28/00	16.3	79.9	2.53	---	47.6	ND	228	0.22	ND	ND
RW-SED-36	0-2	8/28/00	37.9	163	5.51	---	44.4	1.4	817	0.69	ND	1.46
RW-SED-36	2-4	8/28/00	ND	38.7	1.39	---	35.8	---	15.6	ND	ND	ND
RW-SED-37	0-2	8/28/00	17.2	248	8.75	ND	100	ND	828	1.5	ND	5.99
RW-SED-37	2-4	8/28/00	18.6	144	5.77	ND	129	0.60	998	0.74	ND	1.37
RW-SED-38	0-2	8/28/00	28.2	184	7.78	---	192	---	1340	1.6	ND	1.87
RW-SED-38	2-4	8/28/00	ND	69.4	2.11	---	40	---	169	0.24	ND	ND
RW-SED-38	4-6	8/28/00	ND	46.6	ND	---	38.5	---	18	ND	ND	ND
RW-SED-39	0-2	8/25/00	31.1	99.9	3.14	---	70.9	0.664	411	0.9	ND	ND
RW-SED-39	4-6	8/25/00	12.5	26.4	1.22	---	26.5	---	12.7	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Benzene	Ethylbenzene	m,p-Xylene	Methyl tert-butyl ether	Naphthalene	Toluene
LP-SED-01	0-2	8/15/00	4.4	5.2	2.2	ND	ND	ND	ND	ND	ND
LP-SED-01	4-6	8/15/00	4	ND	1.8	ND	ND	ND	ND	ND	ND
LP-SED-01	6-8	8/15/00	4.4	ND	0.88	ND	ND	ND	ND	ND	ND
LP-SED-02	0-2	8/15/00	ND	ND	1.4	ND	ND	ND	ND	ND	ND
LP-SED-02	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-03	0-2	8/18/00	ND	ND	1.5	ND	ND	ND	ND	ND	ND
LP-SED-03	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-04	0-2	8/15/00	ND	ND	5.2	ND	ND	ND	ND	ND	ND
LP-SED-04	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-05	0-2	8/18/00	ND	ND	4.4	ND	ND	ND	ND	ND	ND
LP-SED-05	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-06	0-2	8/15/00	ND	1.6	4.4	ND	ND	ND	ND	ND	ND
LP-SED-06	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-07	0-2	8/18/00	ND	ND	4.2	ND	ND	ND	ND	ND	ND
LP-SED-07	4-6	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-08	0-2*	8/15/00	ND	2.25	5.45	ND	ND	ND	ND	ND	ND
LP-SED-08	2-4	8/15/00	ND	ND	0.64	ND	ND	ND	ND	ND	ND
LP-SED-09	0-2	8/18/00	ND	ND	5.1	ND	ND	ND	ND	ND	ND
LP-SED-09	2-4	8/18/00	ND	ND	0.75	ND	ND	ND	ND	ND	ND
LP-SED-10	0-2	8/7/00	ND	2.7	2.4	ND	ND	ND	ND	ND	ND
LP-SED-10	6-8	8/7/00	ND	ND	1.7	ND	ND	ND	ND	ND	ND
LP-SED-10	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-11	0-2	8/22/00	ND	6.7	14	ND	ND	ND	ND	ND	ND
LP-SED-11	2-4	8/22/00	ND	3.3	9	ND	ND	ND	ND	ND	ND
LP-SED-11	4-6	8/22/00	ND	ND	0.7	ND	ND	ND	ND	ND	ND
LP-SED-12	0-2	8/18/00	ND	ND	3.1	ND	ND	ND	ND	ND	ND
LP-SED-12	2-4	8/18/00	ND	ND	1.9	ND	ND	ND	ND	ND	ND
LP-SED-12	6-8	8/18/00	ND	ND	1.5	ND	ND	ND	ND	ND	ND
LP-SED-13	0-2	8/23/00	ND	ND	5.1	ND	ND	ND	ND	ND	ND
LP-SED-13	2-4	8/23/00	ND	ND	1.4	ND	ND	ND	ND	ND	ND
LP-SED-13	6-8	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Benzene	Ethylbenzene	m,p-Xylene	Methyl tert-butyl ether	Naphthalene	Toluene
LP-SED-14	0-2	8/18/00	ND	ND	3.7	ND	ND	ND	ND	ND	ND
LP-SED-14	4-6	8/18/00	ND	ND	4.2	ND	ND	ND	ND	ND	ND
LP-SED-15	0-2	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-15	2-4	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-16	0-2	8/23/00	ND	9.4	14	ND	ND	ND	ND	ND	ND
LP-SED-16	4-6	8/23/00	ND	4.1	7.5	ND	ND	ND	ND	ND	ND
LP-SED-16	6-8	8/23/00	ND	ND	0.83	ND	ND	ND	ND	ND	ND
LP-SED-17	0-2	8/21/00	ND	4.6	13	ND	ND	ND	ND	ND	ND
LP-SED-17	2-4	8/21/00	ND	8.8	15	ND	ND	ND	ND	ND	ND
LP-SED-17	8-10	8/21/00	ND	ND	7.7	ND	ND	ND	ND	ND	ND
LP-SED-18	0-2	8/22/00	8.6	8.6	15	ND	ND	ND	ND	ND	ND
LP-SED-18	4-6	8/22/00	ND	ND	0.78	ND	ND	ND	ND	ND	ND
LP-SED-19	0-2	8/7/00	ND	ND	1.8	ND	ND	ND	ND	ND	ND
LP-SED-19	6-8	8/7/00	ND	ND	1.4	ND	ND	ND	ND	ND	ND
LP-SED-19	8-10	8/7/00	ND	ND	1.6	ND	ND	ND	ND	ND	ND
LP-SED-20	0-2	8/23/00	ND	3.9	9.6	ND	ND	ND	ND	ND	ND
LP-SED-20	2-4*	8/23/00	ND	7	8.5	ND	ND	ND	ND	ND	ND
LP-SED-20	4-6	8/23/00	ND	ND	8.7	ND	ND	ND	ND	ND	ND
LP-SED-21	0-2	8/21/00	ND	ND	3.8	ND	ND	ND	ND	ND	ND
LP-SED-21	4-6	8/21/00	ND	2.9	5.7	ND	ND	ND	ND	ND	ND
LP-SED-21	6-8	8/21/00	ND	ND	1.2	ND	ND	ND	ND	ND	ND
LP-SED-22	0-2	8/22/00	ND	3.4	8.5	ND	ND	ND	ND	0.44	ND
LP-SED-22	2-4	8/22/00	ND	2.8	7.6	ND	ND	ND	ND	ND	ND
LP-SED-22	6-8	8/22/00	ND	ND	1.2	ND	ND	ND	ND	ND	ND
LP-SED-23	0-2	8/23/00	3.3	ND	1.9	ND	ND	ND	ND	ND	ND
LP-SED-23	6-8	8/23/00	ND	ND	3	ND	ND	ND	ND	ND	ND
LP-SED-23	12-14	8/23/00	ND	0.73	2.6	ND	ND	ND	ND	ND	ND
LP-SED-24	0-2*	8/21/00	ND	7	6.55	ND	ND	ND	ND	0.23	0.795
LP-SED-24	4-6	8/21/00	ND	0.75	2.5	ND	ND	ND	ND	ND	ND
LP-SED-24	6-8	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-25	0-2	8/21/00	ND	ND	6.9	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Benzene	Ethylbenzene	m,p-Xylene	Methyl tert-butyl ether	Naphthalene	Toluene
LP-SED-25	4-6	8/21/00	8.7	5.9	8.7	ND	ND	ND	ND	ND	ND
LP-SED-25	12-14	8/21/00	ND	2.5	4.6	ND	ND	ND	ND	ND	ND
LP-SED-26	0-2	8/22/00	ND	13	11	ND	ND	ND	ND	ND	ND
LP-SED-26	4-6	8/22/00	ND	1.8	4.3	ND	ND	ND	ND	ND	ND
LP-SED-26	12-14	8/22/00	ND	ND	1.1	ND	ND	ND	ND	ND	ND
WL-SED-1	0-2	8/9/00	ND	23	21	ND	ND	ND	ND	ND	ND
WL-SED-1	4-6	8/9/00	9.3	9.2	9.6	ND	ND	ND	ND	ND	ND
WL-SED-1	6-8	8/9/00	15	ND	3.9	ND	ND	ND	ND	ND	ND
WL-SED-1	10-12	8/9/00	18	ND	4.4	ND	ND	ND	ND	ND	ND
WL-SED-2	0-2	10/18/00	ND	42	76	ND	ND	ND	ND	ND	ND
WL-SED-3	0-2	10/18/00	ND	18	33	ND	ND	ND	ND	ND	ND
WL-SED-4	0-2	10/18/00	ND	18	51	ND	ND	ND	ND	ND	ND
WL-SED-5	0-2	8/9/00	4.8	ND	1.1	ND	ND	ND	ND	ND	ND
WL-SED-5	4-6	8/9/00	11	1.5	2.2	ND	ND	ND	ND	ND	ND
WL-SED-5	6-8	8/9/00	7.4	ND	1.5	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results
LP in sample ID indicates Leverett Pond
WP in sample ID indicates Willow Pond

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
LP-SED-01	0-2	8/15/00	ND	89	ND	ND	ND	ND	ND	0.63	0.59	0.9	0.4	ND	0.52	ND	1.7	ND	0.38	ND	1.2	1.4
LP-SED-01	4-6	8/15/00	ND	120	ND	ND	ND	ND	0.54	1.4	1.6	2.1	1.1	0.81	1.5	ND	4.6	ND	0.98	ND	3.5	3.8
LP-SED-01	6-8	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-02	0-2	8/15/00	180	590	ND	ND	0.69	1.0	3.3	11	7.4	15	1.6	3.9	14	0.5	29	1.5	2.1	ND	14	26
LP-SED-02	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-03	0-2	8/18/00	ND	210	ND	ND	ND	ND	0.46	0.89	1.1	1.7	0.72	0.61	1.0	ND	2.7	ND	0.79	ND	1.3	2.3
LP-SED-03	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-04	0-2	8/15/00	ND	220	ND	ND	ND	ND	ND	ND	ND	0.75	ND	ND	ND	ND	1.2	ND	ND	ND	ND	1.1
LP-SED-04	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-05	0-2	8/18/00	120	1300	150	ND	0.49	0.65	1.4	5.8	6.0	12	2.1	2.7	6.3	0.63	14	0.75	2.4	ND	5.8	13
LP-SED-05	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-06	0-2	8/15/00	ND	100	ND	ND	ND	ND	ND	0.58	0.58	1.0	0.42	ND	0.68	ND	1.7	ND	0.47	ND	0.78	1.4
LP-SED-06	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-07	0-2	8/18/00	140	1500	170	ND	ND	0.57	1.4	5.7	5.9	12	2.0	2.7	7.4	0.57	14	0.74	2.3	ND	5.7	13
LP-SED-07	4-6	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-08	0-2*	8/15/00	ND	220	ND	ND	ND	ND	0.55	1.55	2.02	3.35	1.25	0.7	2.03	0.33	4.95	ND	1.25	ND	2.46	4.35
LP-SED-08	2-4	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-09	0-2	8/18/00	160	2000	240	ND	0.88	0.64	1.9	9.3	8.2	19	2.2	1.8	9.6	0.66	22	0.71	2.5	ND	8.3	19
LP-SED-09	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-10	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-10	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-10	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-11	0-2	8/22/00	ND	560	ND	ND	ND	ND	0.94	2.9	2.9	3.9	2.2	1.6	2.9	0.63	7	ND	2.0	ND	3.2	6.5
LP-SED-11	2-4	8/22/00	ND	440	ND	ND	ND	ND	0.68	2.2	2.3	3.0	1.6	1.1	2.0	ND	5.4	ND	1.5	ND	2.7	4.9
LP-SED-11	4-6	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-12	0-2	8/18/00	240	1100	ND	ND	0.72	0.57	2.0	8.2	9.3	17	3.6	3.4	9.0	1.3	23	1.2	4.0	0.4	8.5	20
LP-SED-12	2-4	8/18/00	ND	490	ND	ND	ND	ND	0.83	3.1	3.8	5.7	1.6	1.9	4.0	0.5	9.6	0.54	1.8	ND	4	8.1
LP-SED-12	6-8	8/18/00	91	800	88	ND	ND	ND	0.91	4.1	4.5	7.6	1.7	2.2	4.7	0.66	12	0.61	2.0	ND	2.5	10
LP-SED-13	0-2	8/23/00	ND	260	ND	ND	ND	ND	ND	1.6	1.7	2.1	0.99	0.88	1.5	ND	3.8	ND	1.0	ND	1.7	3.7
LP-SED-13	2-4	8/23/00	ND	140	ND	ND	ND	ND	ND	1.5	1.4	1.8	0.98	0.69	1.2	ND	3.3	ND	0.85	ND	1.2	3.1
LP-SED-13	6-8	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-14	0-2	8/18/00	ND	1000	150	ND	ND	ND	1.3	5.1	5.5	8.9	2.1	2.5	5.1	ND	13	0.84	2.4	ND	6.3	12
LP-SED-14	4-6	8/18/00	ND	610	ND	ND	ND	ND	1.4	4.9	5.2	8.3	2.0	2.6	5.1	ND	14	1.0	2.3	ND	6.6	12
LP-SED-15	0-2	8/22/00	210	410	ND	ND	0.52	0.5	1.2	8.1	8.2	12	5.2	3.0	7.7	1.1	21	1.0	5.2	ND	2.2	19

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
LP-SED-15	2-4	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-16	0-2	8/23/00	ND	400	ND	ND	ND	ND	1.2	2.9	2.8	4.2	1.2	1.6	3.3	ND	6.9	ND	1.3	ND	5.1	6
LP-SED-16	4-6	8/23/00	200	980	160	ND	0.88	ND	2.0	5.8	5.2	7.1	1.9	2.8	5.3	0.62	12	0.91	2.1	ND	7.3	12
LP-SED-16	6-8	8/23/00	ND	ND	ND	ND	ND	ND	ND	1.3	1.1	1.5	0.46	0.6	1.1	ND	2.7	ND	0.5	ND	0.72	2.6
LP-SED-17	0-2	8/21/00	220	1900	380	ND	0.72	ND	1.0	4.3	4.8	8.2	2.3	2.4	4.5	0.97	9.7	0.74	2.2	ND	4.5	8.9
LP-SED-17	2-4	8/21/00	ND	550	ND	ND	ND	ND	ND	1.1	1.2	1.8	ND	ND	0.98	ND	2.4	ND	ND	ND	1.1	2.3
LP-SED-17	8-10	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	2.0	ND	ND	ND	1.1	1.7
LP-SED-18	0-2	8/22/00	ND	660	160	ND	ND	ND	0.72	2.2	1.8	2.5	1.3	0.94	1.9	ND	4.6	ND	1.2	ND	2.8	4.3
LP-SED-18	4-6	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-19	0-2	8/7/00	ND	73	ND	ND	ND	ND	0.42	0.7	0.66	0.77	0.45	0.43	0.78	ND	1.8	ND	0.45	ND	1.0	1.5
LP-SED-19	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-19	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-20	0-2	8/23/00	320	420	ND	1.1	3.4	ND	5.0	8.4	6.9	9.0	2.1	3.4	7.2	0.62	20	3.6	2.4	1.7	22	17
LP-SED-20	2-4*	8/23/00	340	780	135	ND	1.2	0.38	2.9	8.6	7.2	10.2	2.3	3.0	8.1	0.435	18	1.5	2.4	0.63	12.2	16.4
LP-SED-20	4-6	8/23/00	ND	500	ND	ND	ND	ND	2.6	7.4	6.3	9.2	1.9	2.7	6.6	ND	16	1.1	2.1	ND	11	14
LP-SED-21	0-2	8/21/00	ND	150	ND	ND	ND	ND	1.1	2.2	2.3	3.6	0.97	1.0	2.1	ND	6	0.41	1.0	ND	5.1	4.6
LP-SED-21	4-6	8/21/00	130	440	ND	ND	1.0	0.58	3.0	8.8	10	15	3.8	4.0	9.2	1.1	24	1.3	4.3	ND	13	21
LP-SED-21	6-8	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	ND	ND	0.38	ND	0.83	ND	ND	ND	0.43	0.74
LP-SED-22	0-2	8/22/00	ND	300	ND	ND	ND	ND	0.91	2.7	2.7	3.4	1.9	1.2	2.6	ND	6.9	ND	1.6	ND	4.7	6.0
LP-SED-22	2-4	8/22/00	ND	250	ND	ND	0.6	ND	1.6	5.2	5.5	6.6	3.2	2.1	5.2	0.87	14	0.64	3.1	ND	8.1	12
LP-SED-22	6-8	8/22/00	ND	130	ND	ND	ND	ND	0.76	2.2	2.1	2.5	1.3	0.82	1.9	ND	5.1	ND	1.2	ND	2.4	4.6
LP-SED-23	0-2	8/23/00	ND	ND	ND	ND	ND	ND	ND	0.46	0.48	0.61	ND	ND	0.6	ND	1.3	ND	ND	ND	0.76	1.1
LP-SED-23	6-8	8/23/00	90	170	ND	ND	0.81	0.45	2.2	5.0	5.0	6.2	2.0	1.7	4.6	0.64	12	1.2	2.2	ND	9.5	10
LP-SED-23	12-14	8/23/00	63	100	ND	ND	0.71	ND	1.6	3.8	3.7	4.5	1.3	1.7	3.4	0.47	9.3	0.73	1.4	ND	9.2	8.2
LP-SED-24	0-2*	8/21/00	300	570	39.5	0.19	2	0.65	5.55	12	12.5	18.5	6.45	4.8	11.5	2.1	33.5	3.35	6.6	0.44	22	29
LP-SED-24	4-6	8/21/00	230	160	ND	0 75	2.1	0.48	5.9	8.4	8.8	12	3.7	2.9	8.1	1.0	24	3.7	4.4	0.68	26	20
LP-SED-24	6-8	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6	ND	ND	ND	ND	0.53
LP-SED-25	0-2	8/21/00	ND	630	ND	ND	ND	ND	1.2	3.3	3.2	5.5	1.3	1.5	3.4	ND	9.5	ND	1.3	ND	6.9	7.0
LP-SED-25	4-6	8/21/00	ND	310	ND	ND	ND	ND	0.66	1.4	1.4	2.2	0.67	0.71	1.4	ND	3.6	ND	0.64	ND	2.6	2.9
LP-SED-25	12-14	8/21/00	ND	260	ND	ND	ND	ND	0.97	2.8	3.2	4.8	1.3	1.3	2.8	ND	7.4	0.76	1.3	ND	4.6	6.4
LP-SED-26	0-2	8/22/00	210	1200	170	ND	ND	ND	0.68	2.3	2.4	3.1	1.8	1.1	2.2	0.61	5.2	ND	1.6	ND	3.4	5.0
LP-SED-26	4-6	8/22/00	ND	210	ND	ND	ND	ND	0.5	1.3	1.0	1.3	0.69	0.48	1.0	ND	2.7	ND	0.65	ND	1.5	2.5
LP-SED-26	12-14	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-1	0-2	8/9/00	260	180	510	ND	0.5	ND	0.56	0 66	0.6	1.7	0.37	0.59	0 88	ND	2.5	0.46	0.53	ND	1.9	1.9

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
WL-SED-1	4-6	8/9/00	100	100	67	ND	ND	ND	0.33	0.4	ND	0.35	ND	ND	ND	ND	1.6	ND	ND	ND	1.5	1.4
WL-SED-1	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55	ND	ND	ND	0.39	0.44
WL-SED-1	10-12	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-2	0-2	#######	330	630	170	ND	1.1	0.74	3.6	7.3	6.8	8.6	3.6	2.7	7.5	0.96	19	2.0	4.2	0.53	15	17
WL-SED-3	0-2	#######	580	580	250	0.79	2.6	1.0	7.5	16	15	19	5.7	6.5	18	1.6	40	3.8	6.8	0.87	30	38
WL-SED-4	0-2	#######	ND	620	ND	ND	ND	ND	ND	1.8	2.0	2.9	1.2	0.89	2.4	ND	4.5	ND	1.3	ND	1.9	4.4
WL-SED-5	0-2	8/9/00	ND	ND	ND	ND	ND	0.34	0.4	0.48	ND	0.47	ND	ND	0.53	ND	1.9	ND	ND	ND	1.8	1.5
WL-SED-5	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	0.31	ND	0.44	ND	ND	0.33	ND	1.3	ND	ND	ND	0.79	1.1
WL-SED-5	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	0.43	ND	0.35	ND	ND	0.36	ND	1.4	ND	ND	ND	0.89	1.1

Notes:
— = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results
LP in sample ID indicates Leverett Pond
WP in sample ID indicates Willow Pond

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
PCB & PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (ug/kg)

Sample ID	Sample Depth (ft)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	beta-BHC	delta-BHC	Dieldrin
LP-SED-01	0-2	8/15/00	140	61	74	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-01	4-6	8/15/00	1100	160	75	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-01	6-8	8/15/00	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-02	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-02	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-03	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-03	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-04	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-04	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-05	0-2	8/18/00	860	280	43	ND	ND	ND	ND	ND	ND	ND	330	230	ND	ND	ND
LP-SED-05	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-06	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-06	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-07	0-2	8/18/00	5400	830	140	ND	ND	ND	ND	ND	ND	ND	260	160	ND	ND	ND
LP-SED-07	4-6	8/18/00	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-08	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-08	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-09	0-2	8/18/00	1300	360	76	ND	ND	ND	ND	ND	ND	ND	330	260	ND	ND	ND
LP-SED-09	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-10	0-2	8/7/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-10	6-8	8/7/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-10	8-10	8/7/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-11	0-2	8/22/00	1900	250	190	ND	ND	ND	ND	ND	ND	ND	ND	140	ND	ND	ND
LP-SED-11	2-4	8/22/00	2800	350	210	ND	ND	ND	ND	ND	ND	ND	ND	210	ND	ND	ND
LP-SED-11	4-6	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-12	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-12	2-4	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-12	6-8	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-13	0-2	8/23/00	1200	310	170	ND	ND	ND	ND	ND	ND	ND	ND	350	ND	ND	53
LP-SED-13	2-4	8/23/00	1900	240	68	ND	ND	ND	ND	ND	ND	ND	ND	190	ND	ND	ND
LP-SED-13	6-8	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-14	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-14	4-6	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-15	0-2	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
PCB & PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (ug/kg)

Sample ID	Sample Depth (ft)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	beta-BHC	delta-BHC	Dieldrin
LP-SED-15	2-4	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-16	0-2	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-16	4-6	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-16	6-8	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-17	0-2	8/21/00	650	270	62	ND	ND	ND	ND	ND	ND	ND	340	240	ND	ND	ND
LP-SED-17	2-4	8/21/00	3100	770	88	ND	ND	ND	ND	ND	ND	ND	620	450	ND	ND	ND
LP-SED-17	8-10	8/21/00	330	38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-18	0-2	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-18	4-6	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-19	0-2	8/7/00	150	40	18	ND	ND	ND	ND	ND	ND	ND	120	59	ND	ND	ND
LP-SED-19	6-8	8/7/00	9.5	4.2	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-19	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-20	0-2	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-20	2-4	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-20	4-6	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-21	0-2	8/21/00	65	ND	77	ND	ND	ND	ND	ND	ND	ND	380	140	ND	ND	ND
LP-SED-21	4-6	8/21/00	480	66	ND	ND	ND	ND	ND	ND	ND	ND	110	ND	ND	ND	ND
LP-SED-21	6-8	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-22	0-2	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-22	2-4	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-22	6-8	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-23	0-2	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-23	6-8	8/23/00	280	94	34	16	ND	ND	ND	ND	ND	ND	ND	69	ND	ND	33
LP-SED-23	12-14	8/23/00	33	28	67	ND	ND	ND	ND	ND	ND	ND	370	120	ND	ND	32
LP-SED-24	0-2	8/21/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-24	4-6	8/21/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-24	6-8	8/21/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-25	0-2	8/21/00	180	120	ND	ND	ND	ND	ND	ND	ND	ND	330	150	ND	ND	ND
LP-SED-25	4-6	8/21/00	530	270	140	ND	ND	ND	ND	ND	ND	ND	390	260	ND	ND	ND
LP-SED-25	12-14	8/21/00	8300	630	86	28	ND	ND	ND	ND	ND	ND	480	330	ND	ND	670
LP-SED-26	0-2	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-26	4-6	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-26	12-14	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
WL-SED-1	0-2	8/9/00	34	23	39	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
PCB & PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (ug/kg)

Sample ID	Sample Depth (ft)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	beta-BHC	delta-BHC	Dieldrin
WL-SED-1	4-6	8/9/00	1100	130	440	ND	ND	ND	ND	ND	ND	ND	110	43	ND	ND	ND
WL-SED-1	6-8	8/9/00	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-1	10-12	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-2	0-2	10/18/00	2000	170	88	ND	ND	ND	ND	ND	ND	ND	ND	70	ND	ND	ND
WL-SED-3	0-2	10/18/00	3800	230	150	ND	ND	ND	ND	ND	ND	ND	ND	98	ND	ND	ND
WL-SED-4	0-2	10/18/00	1400	160	110	ND	ND	ND	ND	ND	ND	ND	ND	90	ND	ND	ND
WL-SED-5	0-2	8/9/00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
WL-SED-5	4-6	8/9/00	950	49	290	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-5	6-8	8/9/00	1400	71	3600	ND	ND	ND	ND	ND	ND	ND	ND	ND	57	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected
LP in sample ID indicates Leverett Pond
WP in sample ID indicates Willow Pond

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
PCB & PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (ug/kg)

Sample ID	Sample Depth (ft)	Sample Date	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene
LP-SED-15	2-4	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-16	0-2	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-16	4-6	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-16	6-8	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-17	0-2	8/21/00	ND	ND	ND	ND	ND	ND	ND	160	ND	ND	ND	ND
LP-SED-17	2-4	8/21/00	ND	ND	ND	ND	ND	ND	ND	150	ND	ND	ND	ND
LP-SED-17	8-10	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-18	0-2	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-18	4-6	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-19	0-2	8/7/00	ND	ND	ND	ND	ND	ND	ND	33	ND	ND	ND	ND
LP-SED-19	6-8	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-19	8-10	8/7/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-20	0-2	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-20	2-4	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-20	4-6	8/23/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-21	0-2	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-21	4-6	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-21	6-8	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-22	0-2	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-22	2-4	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-22	6-8	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-23	0-2	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-23	6-8	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-23	12-14	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-24	0-2	8/21/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-24	4-6	8/21/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-24	6-8	8/21/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-25	0-2	8/21/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-25	4-6	8/21/00	ND	ND	ND	ND	ND	ND	ND	150	ND	ND	ND	ND
LP-SED-25	12-14	8/21/00	ND	ND	ND	ND	ND	ND	ND	54	ND	ND	ND	ND
LP-SED-26	0-2	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-26	4-6	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-26	12-14	8/22/00	---	---	---	---	---	---	---	---	---	---	---	---
WL-SED-1	0-2	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
PCB & PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (ug/kg)

Sample ID	Sample Depth (ft)	Sample Date	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene
LP-SED-01	0-2	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-01	4-6	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-01	6-8	8/15/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-02	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-02	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-03	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-03	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-04	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-04	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-05	0-2	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-05	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-06	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-06	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-07	0-2	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-07	4-6	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-08	0-2	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-08	2-4	8/15/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-09	0-2	8/18/00	ND	ND	ND	ND	ND	ND	ND	32	ND	ND	ND	ND
LP-SED-09	2-4	8/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-10	0-2	8/7/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-10	6-8	8/7/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-10	8-10	8/7/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-11	0-2	8/22/00	ND	ND	ND	ND	ND	ND	ND	33	ND	ND	ND	ND
LP-SED-11	2-4	8/22/00	ND	ND	ND	ND	ND	ND	ND	31	ND	ND	ND	ND
LP-SED-11	4-6	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-12	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-12	2-4	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-12	6-8	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-13	0-2	8/23/00	ND	ND	ND	ND	ND	ND	ND	100	ND	ND	ND	ND
LP-SED-13	2-4	8/23/00	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND	ND
LP-SED-13	6-8	8/23/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LP-SED-14	0-2	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-14	4-6	8/18/00	---	---	---	---	---	---	---	---	---	---	---	---
LP-SED-15	0-2	8/22/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
PCB & PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (ug/kg)

Sample ID	Sample Depth (ft)	Sample Date	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene
WL-SED-1	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-1	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-1	10-12	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-2	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	41	ND	ND	ND	ND
WL-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	49	ND	ND	ND	ND
WL-SED-4	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	28	ND	ND	ND	ND
WL-SED-5	0-2	8/9/00	---	---	---	---	---	---	---	---	---	---	---	---
WL-SED-5	4-6	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WL-SED-5	6-8	8/9/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected
LP in sample ID indicates Lever
WP in sample ID indicates Willo

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	Lead	TCLP Lead (mg/L)	Mercury	Selenium	Silver
LP-SED-01	0-2	8/15/00	ND	ND	ND	---	5.0	44	---	0.038	ND	ND
LP-SED-01	4-6	8/15/00	ND	ND	ND	---	7.5	60	---	0.034	ND	ND
LP-SED-01	6-8	8/15/00	15	72	ND	---	36	13	---	ND	ND	ND
LP-SED-02	0-2	8/15/00	42	130	ND	---	28	450	ND	0.82	ND	ND
LP-SED-02	2-4	8/15/00	12	76	ND	---	41	13	---	ND	ND	ND
LP-SED-03	0-2	8/18/00	17	75	ND	---	35	59	---	0.25	ND	ND
LP-SED-03	2-4	8/18/00	17	95	ND	---	41	17	---	ND	ND	ND
LP-SED-04	0-2	8/15/00	29	150	6.3	ND	400	1700	3.9	1.3	ND	ND
LP-SED-04	2-4	8/15/00	13	91	ND	---	39	35	---	0.11	ND	ND
LP-SED-05	0-2	8/18/00	29	88	2.1	---	65	520	2.1	0.64	ND	ND
LP-SED-05	2-4	8/18/00	20	140	ND	---	67	33	---	ND	ND	ND
LP-SED-06	0-2	8/15/00	33	120	2.9	---	90	790	2.9	0.80	ND	ND
LP-SED-06	2-4	8/15/00	12	66	ND	---	39	34	---	0.046	ND	ND
LP-SED-07	0-2	8/18/00	33	110	3.0	---	93	740	2.3	0.68	ND	ND
LP-SED-07	4-6	8/18/00	15	80	ND	---	42	20	---	ND	ND	ND
LP-SED-08	0-2*	8/15/00	38	115	2.3	---	34	680	2.2	0.89	ND	ND
LP-SED-08	2-4	8/15/00	39	82	ND	---	43	58	---	0.044	ND	ND
LP-SED-09	0-2	8/18/00	22	86	2.3	---	71	680	2.6	0.57	ND	ND
LP-SED-09	2-4	8/18/00	23	ND	ND	---	14	6.8	---	ND	ND	ND
LP-SED-10	0-2	8/7/00	ND	ND	ND	---	19	32	---	0.043	ND	ND
LP-SED-10	6-8	8/7/00	ND	ND	ND	---	23	8.2	---	ND	ND	ND
LP-SED-10	8-10	8/7/00	21	59	ND	---	33	13	---	ND	ND	ND
LP-SED-11	0-2	8/22/00	34	150	4.2	---	89	1100	1.9	1.2	ND	ND
LP-SED-11	2-4	8/22/00	51	150	1.5	---	37	540	2.6	1.1	ND	ND
LP-SED-11	4-6	8/22/00	ND	ND	ND	---	20	13	---	ND	ND	ND
LP-SED-12	0-2	8/18/00	28	97	2.2	---	24	620	1.9	0.69	ND	ND
LP-SED-12	2-4	8/18/00	24	70	ND	---	22	270	ND	0.34	ND	ND
LP-SED-12	6-8	8/18/00	45	130	ND	---	35	440	1.3	0.69	ND	ND
LP-SED-13	0-2	8/23/00	49	150	4.3	---	43	1200	1.7	1.2	ND	ND
LP-SED-13	2-4	8/23/00	24	78	2.6	---	36	690	1.9	0.86	ND	ND
LP-SED-13	6-8	8/23/00	ND	ND	ND	---	10	7.2	---	ND	ND	ND
LP-SED-14	0-2	8/18/00	36	140	3.8	---	99	870	ND	0.77	ND	ND
LP-SED-14	4-6	8/18/00	34	110	1.9	---	33	510	ND	0.51	ND	ND

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	Lead	TCLP Lead (mg/L)	Mercury	Selenium	Silver
LP-SED-26	4-6	8/22/00	28	130	1.9	—	40	510	ND	0.49	ND	ND
LP-SED-26	12-14	8/22/00	ND	ND	ND	—	12	9.4	—	ND	ND	ND
WL-SED-1	0-2	8/9/00	ND	ND	ND	—	10	89	—	0.038	ND	ND
WL-SED-1	4-6	8/9/00	ND	ND	ND	—	18	180	ND	0.098	ND	ND
WL-SED-1	6-8	8/9/00	ND	ND	ND	—	9.7	32	—	ND	ND	ND
WL-SED-1	10-12	8/9/00	ND	ND	ND	—	10	4.0	—	ND	ND	ND
WL-SED-2	0-2	10/18/00	25	96	1.4	—	34	640	1.4	0.41	ND	ND
WL-SED-3	0-2	10/18/00	36	140	2.2	—	34	960	2.0	0.80	ND	ND
WL-SED-4	0-2	10/18/00	23	83	2.3	—	57	950	1.3	0.53	ND	ND
WL-SED-5	0-2	8/9/00	ND	ND	ND	—	19	87	—	0.028	ND	ND
WL-SED-5	4-6	8/9/00	ND	ND	ND	—	9.2	44	—	0.078	ND	ND
WL-SED-5	6-8	8/9/00	ND	ND	ND	—	14	36	—	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected
* Results in table are the average of two duplicate sample results
LP in sample ID indicates Leverett Pond
WP in sample ID indicates Willow Pond

MUDDY RIVER RESTORATION PROJECT
LEVERETT POND AND WILLOW POND
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	Lead	TCLP Lead (mg/L)	Mercury	Selenium	Silver
LP-SED-15	0-2	8/22/00	ND	ND	ND	—	25	17	—	0.99	ND	ND
LP-SED-15	2-4	8/22/00	ND	ND	ND	—	14	5.6	—	ND	ND	ND
LP-SED-16	0-2	8/23/00	17	110	4.6	ND	130	1500	2.6	1.5	ND	ND
LP-SED-16	4-6	8/23/00	27	140	4.2	—	88	1300	2.8	1.4	ND	ND
LP-SED-16	6-8	8/23/00	ND	ND	ND	—	17	41	—	ND	ND	ND
LP-SED-17	0-2	8/21/00	29	150	6.6	—	150	1700	—	1.4	ND	ND
LP-SED-17	2-4	8/21/00	33	170	6.2	ND	190	1700	2.2	1.7	ND	ND
LP-SED-17	8-10	8/21/00	ND	ND	ND	—	28	120	ND	0.096	ND	ND
LP-SED-18	0-2	8/22/00	25	150	6.0	ND	120	1700	3.1	1.2	ND	ND
LP-SED-18	4-6	8/22/00	ND	ND	ND	—	15	10	—	ND	ND	ND
LP-SED-19	0-2	8/7/00	ND	ND	ND	—	9.9	120	ND	0.094	ND	ND
LP-SED-19	6-8	8/7/00	ND	ND	ND	—	10	8.2	—	ND	ND	ND
LP-SED-19	8-10	8/7/00	ND	34	ND	—	20	18	—	ND	ND	ND
LP-SED-20	0-2	8/23/00	ND	84	2.7	—	98	970	ND	0.72	ND	ND
LP-SED-20	2-4*	8/23/00	13.5	93.5	2.75	—	58	865	2.3	1.035	ND	ND
LP-SED-20	4-6	8/23/00	28	ND	ND	—	31	390	ND	0.77	ND	ND
LP-SED-21	0-2	8/21/00	ND	ND	ND	—	15	63	—	0.12	ND	ND
LP-SED-21	4-6	8/21/00	—	—	—	—	—	—	ND	—	—	—
LP-SED-21	4-6	8/21/00	36	110	2.1	—	29	560	—	0.74	ND	ND
LP-SED-21	6-8	8/21/00	13	ND	ND	—	11	23	—	0.039	ND	ND
LP-SED-22	0-2	8/22/00	ND	120	ND	—	43	300	ND	0.24	ND	ND
LP-SED-22	2-4	8/22/00	24	120	3.0	—	87	920	ND	0.33	ND	ND
LP-SED-22	6-8	8/22/00	12	35	ND	—	21	170	ND	0.046	ND	ND
LP-SED-23	0-2	8/23/00	ND	ND	ND	—	6.4	32	—	0.037	ND	ND
LP-SED-23	6-8	8/23/00	ND	ND	ND	—	10	150	ND	0.27	ND	ND
LP-SED-23	12-14	8/23/00	ND	ND	ND	—	23	89	—	0.12	ND	ND
LP-SED-24	0-2*	8/21/00	17	49.5	0.5	—	9.05	175	1.2	0.56	ND	ND
LP-SED-24	4-6	8/21/00	ND	ND	ND	—	13	63	—	0.14	ND	ND
LP-SED-24	6-8	8/21/00	ND	ND	ND	—	24	190	ND	0.081	ND	ND
LP-SED-25	0-2	8/21/00	—	—	—	—	—	—	ND	0.39	—	—
LP-SED-25	4-6	8/21/00	16	98	2.6	ND	130	850	1.7	0.87	ND	ND
LP-SED-25	12-14	8/21/00	—	—	—	—	—	—	ND	0.51	—	—
LP-SED-26	0-2	8/22/00	23	110	4.4	—	89	1300	2.7	1.7	ND	ND

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
VOLATILE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C5-C8 Aliphatic Hydrocarbons	C9-C10 Aromatic Hydrocarbons	C9-C12 Aliphatic Hydrocarbons	Methyl tert-butyl ether	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene
WD-SED-1	0-2	8/8/00	9.8	ND	25	ND	ND	ND	ND	ND	ND	ND
WD-SED-1	2-4	8/8/00	11	2	57	ND	ND	ND	ND	ND	ND	ND
WD-SED-1	6-8	8/8/00	8.2	ND	1.6	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	0-2	8/4/00	6.0	ND	1.3	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	6-8	8/4/00	6.5	ND	1.4	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	8-10	8/4/00	10	ND	2.5	ND	ND	ND	ND	ND	ND	ND
WD-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	0-2	8/4/00	4.9	ND	1.7	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	6-8	8/4/00	7.8	ND	2.1	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	8-10	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	C11-C22 Aromatic Hydrocarbons	C19-C36 Aliphatic Hydrocarbons	C9-C18 Aliphatic Hydrocarbons	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene
WD-SED-1	0-2	8/8/00	ND	220	ND	ND	ND	ND	1.5	2.6	2.2	2.7	0.81	1.2	2.7	ND
WD-SED-1	2-4	8/8/00	ND	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-1	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	8-10	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	0-2	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	6-8	8/4/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	8-10	8/3/00	ND	ND	ND	ND	ND	ND	0.49	1.3	1.0	3.5	0.55	1.3	1.4	ND
WD-SED-6	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	ND	ND	ND	ND
WD-SED-6	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
— = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
EXTRACTABLE PETROLEUM HYDROCARBON SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
WD-SED-1	0-2	8/8/00	7.2	0.79	0.93	ND	6.7	5.4
WD-SED-1	2-4	8/8/00	0.52	ND	ND	ND	ND	0.61
WD-SED-1	6-8	8/8/00	ND	ND	ND	ND	ND	ND
WD-SED-2	0-2	8/4/00	ND	ND	ND	ND	ND	ND
WD-SED-2	6-8	8/4/00	ND	ND	ND	ND	ND	ND
WD-SED-2	8-10	8/4/00	ND	ND	ND	ND	ND	ND
WD-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND
WD-SED-4	0-2	8/4/00	ND	ND	ND	ND	ND	ND
WD-SED-4	6-8	8/4/00	ND	ND	ND	ND	ND	ND
WD-SED-5	0-2	8/3/00	ND	ND	ND	ND	ND	ND
WD-SED-5	4-6	8/3/00	ND	ND	ND	ND	ND	ND
WD-SED-5	8-10	8/3/00	2.4	ND	0.59	ND	0.37	2.0
WD-SED-6	0-2	8/3/00	ND	ND	ND	ND	ND	ND
WD-SED-6	4-6	8/3/00	0.8	ND	ND	ND	0.57	0.66
WD-SED-6	6-8	8/3/00	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
PCB SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
WD-SED-1	0-2	8/8/00	ND	ND	ND	ND	0.63	0.32	0.12
WD-SED-1	2-4	8/8/00	ND	ND	ND	ND	0.26	0.11	0.046
WD-SED-1	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	0-2	8/4/00	---	---	---	---	---	---	---
WD-SED-2	6-8	8/4/00	---	---	---	---	---	---	---
WD-SED-2	8-10	8/4/00	---	---	---	---	---	---	---
WD-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	0-2	8/4/00	---	---	---	---	---	---	---
WD-SED-4	6-8	8/4/00	---	---	---	---	---	---	---
WD-SED-5	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	8-10	8/3/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-chlordane	alpha-BHC	beta-BHC	delta-BHC	Dieldrin	Endo-sulfan I	Endo-sulfan II	Endo-sulfan sulfate	Endrin
WD-SED-1	0-2	8/8/00	0.13	0.11	ND	ND	ND	ND	0.092	ND	ND	ND	ND	ND	ND
WD-SED-1	2-4	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-1	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	0-2	8/4/00	---	---	---	---	---	---	---	---	---	---	---	---	---
WD-SED-2	6-8	8/4/00	---	---	---	---	---	---	---	---	---	---	---	---	---
WD-SED-2	8-10	8/4/00	---	---	---	---	---	---	---	---	---	---	---	---	---
WD-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	0-2	8/4/00	---	---	---	---	---	---	---	---	---	---	---	---	---
WD-SED-4	6-8	8/4/00	---	---	---	---	---	---	---	---	---	---	---	---	---
WD-SED-5	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	8-10	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
PESTICIDE SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Hepta-chlor	Heptachlor epoxide	Methoxy-chlor	Toxaphene	Technical Chlordane
WD-SED-1	0-2	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-1	2-4	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-1	6-8	8/8/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-2	0-2	8/4/00	---	---	---	---	---	---	---	---	---
WD-SED-2	6-8	8/4/00	---	---	---	---	---	---	---	---	---
WD-SED-2	8-10	8/4/00	---	---	---	---	---	---	---	---	---
WD-SED-3	0-2	10/18/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-4	0-2	8/4/00	---	---	---	---	---	---	---	---	---
WD-SED-4	6-8	8/4/00	---	---	---	---	---	---	---	---	---
WD-SED-5	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-5	8-10	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	0-2	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	4-6	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND
WD-SED-6	6-8	8/3/00	ND	ND	ND	ND	ND	ND	ND	ND	ND

MUDDY RIVER RESTORATION PROJECT
WARD'S POND
INORGANIC SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Sample Date	Arsenic	Barium	Cadmium	TCLP Chromium (mg/L)	Chromium	TCLP Lead (mg/L)	Lead	Mercury	Selenium	Silver
WD-SED-1	0-2	8/8/00	ND	69	1.8	---	34	1.1	1000	0.36	ND	ND
WD-SED-1	2-4	8/8/00	ND	ND	ND	---	11	ND	170	0.21	ND	ND
WD-SED-1	6-8	8/8/00	ND	ND	ND	---	13	---	24	0.031	ND	ND
WD-SED-2	0-2	8/4/00	ND	43	ND	---	14	---	28	0.12	ND	ND
WD-SED-2	6-8	8/4/00	ND	ND	ND	---	13	---	ND	ND	ND	ND
WD-SED-2	8-10	8/4/00	ND	ND	ND	---	25	---	16	ND	ND	ND
WD-SED-3	0-2	10/18/00	ND	ND	ND	---	9.6	---	66	0.085	ND	ND
WD-SED-4	0-2	8/4/00	ND	31	ND	---	17	---	12	ND	ND	ND
WD-SED-4	6-8	8/4/00	ND	ND	ND	---	9.4	---	ND	ND	ND	ND
WD-SED-5	0-2	8/3/00	11	43	ND	---	10	ND	130	0.14	ND	ND
WD-SED-5	4-6	8/3/00	ND	40	ND	---	14	19	190	ND	ND	ND
WD-SED-5	8-10	8/3/00	ND	30	ND	---	26	---	42	0.034	ND	ND
WD-SED-6	0-2	8/3/00	ND	ND	ND	---	8.5	---	28	0.078	ND	ND
WD-SED-6	4-6	8/3/00	ND	ND	ND	---	9.1	---	40	0.091	ND	ND
WD-SED-6	6-8	8/3/00	ND	ND	ND	---	8.7	---	12	ND	ND	ND

Notes:
--- = Not Analyzed
ND = Not Detected

MUDDY RIVER RESTORATION PROJECT
TOTAL PHOSPHORUS SEDIMENT SAMPLE ANALYSIS RESULTS (mg/kg)

Sample ID	Sample Depth (ft BGS)	Total Phosphorus
BBF-SED-19	0-2	15
BBF-SED-19	4-6	ND
BBF-SED-23	0-2	ND
BBF-SED-23	2-4	25
BBF-SED-23	12-14	ND
RW-SED-01	0-2	262
RW-SED-01	4-6	324
RW-SED-01	6-8	433
RW-SED-02	2-4	291
RW-SED-02	4-6	324
RW-SED-02	8-10	287
RW-SED-11	0-2	700
RW-SED-12	0-2	520
RW-SED-13	0-2	790
RW-SED-16	0-2	960
RW-SED-17	0-2	600
RW-SED-18	0-2	1000
RW-SED-19	0-2	860
RW-SED-19	2-4	1000
RW-SED-19	4-6	1900
RW-SED-21	2-4	980
RW-SED-23	0-2	396
RW-SED-23	2-4	362
RW-SED-23	6-8	621
RW-SED-25	0-2	451
RW-SED-25	2-4	634
RW-SED-27	0-2	1290
RW-SED-27	2-4	1090
RW-SED-29	0-2	684
RW-SED-29	2-4	2870
RW-SED-31	0-2	668
RW-SED-31	2-4	1600
RW-SED-31	4-6	1240
RW-SED-33	0-2	2840
RW-SED-33	2-4	614
RW-SED-35	0-2	2870
RW-SED-35	4-6	688
RW-SED-37	0-2	3180
RW-SED-37	2-4	1600
RW-SED-39	0-2	917
RW-SED-39	4-6	801

Notes:
ND = Not Detected
Samples not shown were not analyzed for Total Phosphorus

MUDDY RIVER RESTORATION PROJECT
PAINT FILTER SEDIMENT SAMPLE ANALYSIS RESULTS

Sample ID	Sample Date	Liquids Present	Percent Moisture
BBF-PF-01	07/19/00	N	24.7
BBF-PF-02	07/21/00	Y.	12.1
BBF-PF-03	07/25/00	N	17.9
BBF-PF-04	07/28/00	N.	21.3
BBF-PF-05	08/01/00	N	41.6
BBF-PF-06	09/06/00	Y	52.7
BBF-PF-07	09/07/00	Y	66.2
BBF-PF-10	08/14/00	N	52.6
CG-PF-01	07/27/00	Y	18.3
LP-PF-01	08/07/00	N	27.6
LP-PF-02	08/18/00	N	49.6
RW-PF-01	08/10/00	N	---
RW-SED-PF-3	08/18/00	N	---
RW-PF-03	08/30/00	N	---
WD-PF-1	08/03/00	Y	17.2
WL-SED-PF	08/09/00	N	16.3

Notes:
--- Percent Moisture results not reported

Appendix G

APPENDIX G

WATER QUALITY

MUDDY RIVER PHASE I
FLOOD CONTROL, WATER QUALITY AND HABITAT ENHANCEMENT PROJECT

WATER QUALITY SAMPLING REPORT
OCTOBER/DECEMBER 2000

1.0 INTRODUCTION

Jason M. Cortell & Associates Inc. (CORTELL) presents this Water Quality Sampling Report conducted on the Muddy River in October and December 2000. The objective of this report is to provide the most current and synoptic water quality data along the Muddy River for use in the development of construction mitigation measures as well as the Phase I Project permitting purposes. The data collected as part of this recent sampling has allowed for the expansion of the existing limited water quality data base and provided data for additional water quality parameters which previously had not been analyzed. Attachment A contains correspondence with the Massachusetts Department of Environmental Protection (DEP) that resulted in the agency's approval of the Muddy River Water Quality Sampling Plan. The Muddy River and its associated water bodies have been designated as Class B surface waters by the DEP. Class B waters are considered swimmable and fishable.

1.1 Field Activities

On October 4, and 6, and December 14, 2000, CORTELL personnel collected water quality samples during dry (October 4, 2000) and wet weather conditions (October 6 and December 14, 2000). Instantaneous grab samples were obtained from each of the Muddy River sections between roadway crossings and from eight (8) of the major outfalls. The sampling locations included the following:

- Muddy River at Agassiz Road Bridge
- Muddy River at Longwood Avenue Bridge
- Muddy River at Willow Pond Road Bridge
- *Outfalls:*
  1.) Boston Gate House
  2.) Emmanuel College Drain
  3.) Longwood Avenue Drain
  4.) Tannery Brook Drain
  5.) Huntington Avenue Drain
  6.) Village Brook Drain
  7.) Daisy Field Drain
  8.) Chestnut Street Drain

The sampling locations are depicted in Figure 1. Summarized field notes are provided in Table 1.

Water quality samples were collected by CORTELL, securely packed in a chilled cooler (approx. 4°C) along with a Chain of Custody, and hand-delivered to Alpha Analytical Laboratories of Westborough, MA., a Commonwealth of Massachusetts Certified Analytical Laboratory.

Water samples were collected at each of the above referenced locations during both sampling events and analyzed for the following:

- Fecal Coliform Bacteria
- Fecal Streptococcus Coliform Bacteria
- Total Suspended Solids (TSS)
- True and Apparent Color
- Turbidity
- Alkalinity
- Acidity
- Total Phosphorus
- Orthophosphate Phosphorus
- Ammonia Nitrogen
- Nitrate-Nitrite Nitrogen

In addition, water samples were collected at the Willow Pond Outlet, the trash rack in the Riverway adjacent to the Back Bay Yard, and at Ipswich Street and analyzed for total lead content during the dry and first wet weather sampling event. Dissolved oxygen (DO), pH and temperature were also measured in the field during each sampling event.

2.0 FIELD and ANALYTICAL RESULTS

2.1 Water Quality Data for Dry Conditions (October 4, 2000)

As previously noted, dissolved oxygen (DO), pH and temperature were analyzed by CORTELL personnel in the field. The following summarizes the field findings:

	DO (mg/l)	%Sat.	pH (s.u.)	Temperature (°C)
Boston Gatehouse	9.0	89	7.8	15
Agassiz Road Bridge	7.5	75	8.2	16.5
Longwood Ave. Bridge	7.2	72	7.6	16.5
Longwood Ave. Drain	8.2	83	8.0	16.5
Tannery Brook Drain	9.2	95	7.6	17
Village Brook Drain	11.0	115	7.9	17
Daisy Field Drain	10.8	105	7.4	15
Willow Pond Road	8.6	91	7.7	17.5
Huntington Ave. Drain	11.2	118	7.6	18
Water Quality Standard	***>5.0***	***>75***	***6.5 - 8.3***	***<20°C***

Field analysis indicated that during dry weather conditions, excluding the percent saturation of dissolved oxygen at the Longwood Avenue Bridge, the Muddy River and its associated water bodies comply with the DEP Class B Surface Water Quality Standards. The slight decrease in percent saturation of dissolved oxygen at the Longwood Avenue Bridge was not considered a significant exceedance of the current water quality standards.

Analytical results are tabulated on Table 2. Laboratory reports are provided in Attachment B.

Due to the extremely slow-moving nature of the Muddy River, especially during periods of dry weather, total suspended solids were low during sampling with the highest concentration of solids detected at the Daisy Field Drain (38 milligrams per liter). Two locations, the Muddy River at the Longwood Avenue Bridge and the Huntington Avenue Drain, did not contain any suspended solids. Turbidity was also observed at low levels as the Tannery Brook Drain produced the highest turbidity concentration of 19 Nephelometric Turbidity Units (NTU). The remainder of sampling locations were observed as relatively clear as evidenced by the next highest analytical result of 5.5 NTU at the Longwood Avenue Drain.

Four of the nine sampling locations contained fecal coliform levels above the DEP Water Quality Standard for Class B Surface Waters of 200 colonies per 100 milliliters (col/100 ml). The highest levels obtained, 500 col/100 ml, were detected at the Agassiz Road Bridge and the Tannery Brook Drain. 300 col/100 ml of fecal coliform was detected at both the Boston Gate House and the Daisy Field Drain. Three of the four previously noted fecal coliform locations are areas of heavy wildlife activity which primarily consists of geese infestation. Fecal streptococcus coliform levels were relatively low however, the Daisy Field Drain and Willow Pond Road samples contained 300 and 240 col/100 ml, respectively. Fecal streptococcus is generally an indicator of human fecal waste material. High streptococcus levels at these locations may be the result of illegal sanitary sewer connections upstream in each respective drainage system.

Lead was not detected in any of the three samples collected.

The dry weather water quality data showed some coloration of water due to dissolved matter, most likely humic materials generated from decaying leaves and wetland soil. The alkalinity values indicated that the water was moderately buffered against changes in pH with the Tannery Brook Drain and the Daisy Field Drain having the highest alkalinity. The inorganic nitrogen nutrient levels were high in the Daisy Field Drain as evidenced by excessively high nitrogen concentrations. The Tannery Brook and Daisy Field Drains were also noted to contribute the highest phosphorus concentrations.

2.2 Water Quality Data for Wet Weather Conditions

2.2.1 October 6, 2000

The October 6, 2000 wet weather sampling event was conducted at the end of a light overnight rainfall (approximately 0.3 inches as reported by the National Weather Service). Dissolved oxygen (DO), pH and temperature were analyzed by CORTELL personnel in the field during wet weather conditions. The following summarize the field findings:

	DO (mg/l)	%Sat.	pH (s.u.)	Temperature (°C)
Boston Gatehouse	8.6	84	7.6	14.5
Agassiz Road Bridge	9.6	95	7.6	15
Longwood Ave. Bridge	9.4	93	7.5	15
Longwood Ave. Drain	10.4	104	7.4	16
Tannery Brook Drain	9.6	95	7.7	15
Village Brook Drain	8.8	85	7.8	15
Daisy Field Drain	11.8	118	10.4	15.5
Willow Pond Road	8.6	84	7.8	15
Huntington Ave. Drain	9.0	89	7.4	15
Chestnut Street Drain	NS	NA	7.8	15
Emmanuel College Drain	8.4	82	7.8	15.5
Water Quality Standard	***>5.0***	***>75***	***6.5 - 8.3***	***<20°C***

Field analysis indicated that during this wet weather event, excluding pH at the Daisy Field Drain, the Muddy River and its associated water bodies comply with the DEP Class B Surface Water Quality Standards. Dissolved oxygen (DO) could not be measured in the Chestnut Street Drain due to the limited depth of flow within the drainage system. According to proper water quality sampling protocol, DO readings should be obtained in-situ.

Analytical results are tabulated on Table 2. Laboratory reports are provided in Attachment B.

Total suspended solids (TSS) concentrations were elevated due to the additional flow and increased velocity of discharges to the Muddy River however, not as high as would be expected during a rainfall event's first flush. The highest TSS levels were detected at concentrations of 640 and 150 milligrams per liter (mg/l) at the Huntington Avenue Drain and Willow Pond Road, respectively. The remaining locations ranged in TSS levels from non-detect (ND) at both the Longwood Avenue Drain and Village Brook Drain, to 80 mg/l at the Agassiz Road Bridge. Turbidity was also observed at generally elevated levels throughout with the highest reading of 170 Nephelometric Turbidity Units (NTU) detected at the Huntington Avenue Drain.

Excluding the Boston Gate House, the Longwood Avenue Bridge and the Village Brook Drain, each sampling location exceeded the current DEP Water Quality Standard for

Class B Surface Waters of 200 colonies per 100 milliliters for fecal coliform. Similar results were detected for fecal streptococcus coliform levels however only levels at the Longwood Avenue Bridge and the Village Brook Drain were within Class B Standards. Neither fecal coliform nor fecal streptococcus coliform, an indicator of human fecal waste, were detected at the Village Brook Drain thereby confirming the effectiveness of the recent elimination measures of illegal sanitary sewer connections to the Village Brook drainage system. The highest levels obtained for both coliform bacteria were detected at the Daisy Field Drain which, as previously noted, is a prime area for geese infestation. Other areas displayed elevated levels of both coliform bacteria due to wildlife as well as human (homeless) activity (Agassiz Road Bridge area/Back Bay Fens). Other areas containing elevated levels of fecal streptococcus coliform bacteria may have illegal sanitary sewer connections upstream in each respective drainage system.

Lead was not detected in any of the three samples collected.

The October 6, 2000 data show approximately the same levels of dissolved coloration in the water as observed in the dry weather analysis. However, the apparent color values were higher due to suspended materials in stormwater. The buffering capacity (alkalinity) of the water also remained at adequate levels, although there was a slight overall decline. While the Longwood Avenue Drain and the Tannery Brook Drain both contributed elevated inorganic nitrogen and phosphorus nutrient concentrations to the Muddy River during the first wet weather sampling event, the Daisy Field Drain continued to contain the highest nutrient concentrations.

2.2.2 December 14, 2000

The December 14, 2000 wet weather sampling event was during a steady, light to moderate rainfall which included snow, ice and slush (approximately 0.88 inches of precipitation as reported by the National Weather Service). Dissolved oxygen (DO), pH and temperature were analyzed by CORTELL personnel in the field during wet weather conditions. The following tables summarize the field findings:

	DO (mg/l)	%Sat.	pH (s.u.)	Temperature (°C)
Boston Gatehouse	10.8	80	8.0	3.5
Agassiz Road Bridge	9.8	75	7.8	4.5
Longwood Ave. Bridge	13.3	98	6.8	3
Longwood Ave. Drain	13.3	98	7.1	3
Tannery Brook Drain	13.2	97	7.3	3
Village Brook Drain	12.8	97	7.1	4
Daisy Field Drain	12.6	95	7.2	3.75
Willow Pond Road	11.8	87	7.3	3
Huntington Ave. Drain	11.6	87	6.9	3.5
Chestnut Street Drain	12.5	92	7.3	3.2
Emmanuel College Drain	10.2	76	7.1	3.5
Water Quality Standard	***>5.0***	***>75***	***6.5 - 8.3***	***<20°C***

Field analysis indicated that during this wet weather event, the Muddy River and its associated water bodies comply with the DEP Class B Surface Water Quality Standards. Because the dissolved oxygen concentrations in the storm water drains were in excess of saturation values, the meter readings were checked against two Winkler titration analyses that were conducted in the field. The Winkler titration results were within less than one-tenth of one mg/l of the meter readings.

Analytical results are tabulated on Table 2. Laboratory reports are provided in Attachment B.

Total suspended solids (TSS) concentrations were elevated due to the higher flow and increased velocity of discharges to the Muddy River. The highest TSS levels were detected at concentrations of 210 and 170 milligrams per liter (mg/l) at the Huntington Avenue Drain and the Chestnut Street Drain, respectively. The remaining locations ranged in TSS levels from non-detect (ND) at the Boston Gatehouse, to 62 mg/l at the Longwood Avenue Bridge. Turbidity was also observed at generally elevated levels throughout with the highest reading of 68 Nephelometric Turbidity Units (NTU) detected at the Huntington Avenue Drain. Again, turbidity levels were not as high as would have been expected due to the sampling occurring some time after the first flush of the rainfall event.

Excluding the Boston Gate House, the Agassiz Road Bridge and the Village Brook Drain, each sampling location exceeded the current DEP Water Quality Standard for Class B Surface Waters of 200 colonies per 100 milliliters (col/100 ml) for fecal coliform. Similar results were detected for fecal streptococcus coliform levels with Class B Standards exceedances noted at the same locations. In fact, fecal streptococcus coliform, an indicator of human fecal waste, was detected at non-detectable levels at the Village Brook Drain thereby confirming the effectiveness of the recent elimination measures of illegal sanitary sewer connections to the Village Brook drainage system. The highest fecal coliform levels were detected at the Longwood Avenue Bridge, the Tannery Brook Drain and the Chestnut Street Drain at concentrations of 16,000 col/100 ml. Fecal streptococcus levels of 30,000 col/100 ml were observed at both the Longwood Avenue Bridge and Drain. Other notable concentrations of fecal streptococcus included the Tannery Brook Drain (24,000 col/100 ml), the Chestnut Street Drain (16,000 col/100 ml) and the Daisy Field Drain (9,000 col/100 ml). These areas displaying elevated levels of both coliform bacteria can likely be attributed to wildlife (geese infestation) as well as human (homeless) activity (Agassiz Road Bridge area/Back Bay Fens). Other areas, especially within drainage outlets, that contain elevated levels of fecal streptococcus coliform bacteria may have illegal sanitary sewer connections upstream in each respective drainage system.

The December 14, 2000 data show approximately the same levels of dissolved coloration in the water as observed in the dry weather analysis. However, the apparent color values were higher due to suspended materials in stormwater. The buffering capacity (alkalinity) of the water also remained at adequate levels, although there was a

slight overall decline as compared to dry weather conditions. While both the Longwood Avenue Bridge and Drain contributed elevated inorganic nitrogen and phosphorus nutrient concentrations to the Muddy River during this wet weather sampling event, the Daisy Field Drain continued to contain the highest nutrient concentrations.

3.0 RECOMMENDATIONS for FURTHER WATER QUALITY MONITORING

The historical water quality database for the Muddy River is scattered and lack a consistent monitoring effort throughout the drainage system. The database includes the following data reporting:

Division of Water Pollution Control (now the MA DEP)	1974
Division of Water Pollution Control (now the MA DEP)	1981
Division of Water Pollution Control (now the MA DEP)	1986
Army Corps of Engineers	1992
Northeastern University	1995
Charles River Watershed Association (CRWA)	1998

In addition, since 1999, the U.S. Geological Survey (USGS) has operated a monitoring station for continuous flow, water temperature, specific conductance and random water quality parameters at the Netherlands Road Bridge (USGS Gage MA01104683). Due to budget constrictions, the station did not consistently monitor the River (i.e. daily, monthly, quarterly, etc.) and has not provided data since September 27, 1999.

The water quality monitoring data reported herein has resulted in the finding of exceedances of the DEP Class B Water Quality Criteria for percent oxygen saturation at the Longwood Avenue Bridge (dry weather conditions), pH in the Daisy Field Drain (first wet weather sampling event – October 6, 2000), and fecal coliform and fecal streptococcus coliform bacteria (during each sampling event) at several locations within the Muddy River system. According to the New England Interstate Water Pollution Control Commission (NEIWPCC) in their Fall/Winter 2000 newsletter, the United States Environmental Protection Agency (EPA) will be publishing regional nutrient criteria in early 2001. It is likely at this time that additional Muddy River water quality exceedances will become apparent when said criteria are published.

Based on the findings reported herein, it is recommended that a long-term water quality monitoring program be instituted. Water quality sampling is recommended to occur on a quarterly basis. The sampling would be conducted a the following locations:

Within the Muddy River at:

Ipswich Street
Agassiz Road
Boston Gate Houses
Fens Bridge

Longwood Avenue Bridge
Outlet of Leverett Pond
Outlet of Willow Pond
Outlet of Wards Pond

Drainage Outfalls:

Emmanuel College Drain
Longwood Avenue Drain
Tannery Brook Drain
Huntington Avenue Drain
Village Brook Drain
Daisy Field Drain
Chestnut Street Drain

In addition to the recommended monitoring of the above referenced Muddy River locations, it is also suggested that investigations be conducted further up into the drainage system as a whole to determine potential sources of non-domestic sewage nutrients.

During each quarter, water quality samples would be collected during a dry period (no rainfall in the past 96 hours), during precipitation, and the day following a precipitation event. The rationale behind this frequency of sampling is to obtain seasonal data preceding precipitation (rain or snow), and to monitor the impact to water quality during and after an event. Therefore, in any given year, up to 12 sampling events could occur at each sampling location.

Samples should be collected and analyzed for the following parameters:

Fecal Coliform Bacteria
Fecal Streptococcus Coliform Bacteria
Total Suspended Solids (TSS)
True and Apparent Color
Turbidity
Alkalinity
Acidity
Total Phosphorus
Orthophosphate Phosphorus
Ammonia Nitrogen
Nitrate-Nitrite Nitrogen

Field monitoring for pH, temperature and dissolved oxygen should also be conducted during any and all sampling.

It is also proposed that the sampling and analysis be conducted by the Project Proponents commencing immediately after the DEIR is filed.

It is assumed that investigations of the Tannery Brook Drain, Longwood Avenue Drain and Daisy Field Drain will be conducted by the Boston Water and Sewer Commission and/or the Town of Brookline as appropriate.

TABLES

Table 1

Muddy River Water Quality Sampling

Summary of Field Sampling Notes

	Location	Date	Time	Temp. (°C)	pH (S.U.)	DO (mg/l)	% Sat.	Notes
DRY	Boston Gate House	10/4/00	10:08 AM	15°	7.8	9.0	89	no dry weather flow observed
	Agassiz Bridge	10/4/00	10:30 AM	16.5°	8.2	7.5	75	
	Emmanuel College Drain	10/4/00	NS	NS	NS	NS	NA	dry, no flow observed
	MR @ Longwood Ave Bridge	10/4/00	12:30 PM	16.5°	7.6	7.2	72	
	Longwood Ave. Drain	10/4/00	12:35 PM	16.5°	8.0	8.2	83	strong urine odor; no base flow evident; significant mosquito activity
	Tannery Brook Drain	10/4/00	1:30 PM	17°	7.6	9.2	95	significant mosquito activity
	Huntington Ave. Drain	10/4/00	1:50 PM	18°	7.6	11.2	118	significant volume of H2O heard entering riverway upstream under Huntington Ave.; very low flow
	Village Brook Drain	10/4/00	2:15 PM	17°	7.9	11.0	115	
	Daisy Field Drain	10/4/00	2:35 PM	15°	7.4	10.8	105	significant mosquito activity; sign posted area sprayed for West Nile Virus
	MR @ Willow Pond Road Bridge	10/4/00	2:50 PM	17.5°	7.7	8.6	91	
	Chestnut St. Drain	10/4/00	3:00 PM	NS	NS	NS	NA	No flow
WET	MR @ Boston Gate House	10/6/00	2:10 PM	14.5°	7.6	8.6	84	
	Agassiz Bridge	10/6/00	2:30 PM	15°	7.6	9.6	95	
	Emmanuel College Drain	10/6/00	1:40 PM	15.5°	7.8	8.4	82	slight sheen on standing water in basin; packing material (popcorn), plastic bottles & cups obsv'd; food wastes (cooked shrimp) also obsv'd
	MR @ Longwood Ave Bridge	10/6/00	1:05 PM	15°	7.5	9.4	93	
	Longwood Ave. Drain	10/6/00	1:15 PM	16°	7.4	10.4	104	Petroleum odor noted
	Tannery Brook Drain	10/6/00	11:50 AM	15°	7.7	9.6	95	
	Huntington Ave. Drain	10/6/00	11:15 AM	15°	7.4	9.0	89	
	Village Brook Drain	10/6/00	10:50 AM	15°	7.8	8.8	85	
	Daisy Field Drain	10/6/00	10:30 AM	15.5°	10.4	11.8	118	
	MR @ Willow Pond Road Bridge	10/6/00	10:05 AM	15°	7.8	8.6	84	
	Chestnut St. Drain	10/6/00	9:28 AM	15°	7.8	NS	NA	No accurate reading could be obtained due to the limited (1"), high velocity, wet weather flow.
WET	MR @ Boston Gate House	12/14/00	2:10 PM	3.5°	8.0	10.8	80	
	Agassiz Bridge	12/14/00	2:30 PM	4.5°	7.8	9.8	75	
	Emmanuel College Drain	12/14/00	1:40 PM	3.5°	7.1	10.2	76	
	MR @ Longwood Ave Bridge	12/14/00	1:05 PM	3°	6.8	13.3	98	
	Longwood Ave. Drain	12/14/00	1:15 PM	3°	7.1	13.3	98	
	Tannery Brook Drain	12/14/00	11:50 AM	3°	7.3	13.2	97	
	Huntington Ave. Drain	12/14/00	11:15 AM	3.5°	6.9	11.3	87	
	Village Brook Drain	12/14/00	10:50 AM	4°	7.1	12.8	97	
	Daisy Field Drain	12/14/00	10:30 AM	3.75°	7.2	12.6	95	
	MR @ Willow Pond Road Bridge	12/14/00	10:05 AM	3°	7.3	11.8	87	
	Chestnut St. Drain	12/14/00	9:28 AM	3.2°	7.3	12.5	92	

Notes: MR - Muddy River
s.u. - standard units
mg/l - milligrams per liter
NS - not sampled
NA - not applicable

Table 2
Muddy River Water Quality
Dry and Wet Weather Conditions
October & December 2000

Dry Conditions
October 4, 2000

	Units	Boston Gatehouse	Agassiz Road Bridge	Longwood Ave. Bridge	Longwood Ave. Drain	Tannery Brook Drain	Village Brook Drain	Daisy Field Drain	Willow Pond Road	Huntington Ave. Drain	Ipswich Street	Back Bay Yard	Willow Pond Outlet
Turbidity	NTU	1.2	3.8	3.9	5.5	19	3.1	2.1	3.5	4.2	NA	NA	NA
True Color	A.P.C.U	18	18	17	18	12	12	8	12	18	NA	NA	NA
Apparent Color	A.P.C.U	23	27	18	22	65	16	18	23	17	NA	NA	NA
Acidity	mg CaCO3/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
Alkalinity (Total)	mg CaCO3/L	35	33	44	46	62	39	65	27	43	NA	NA	NA
Total Suspended Solids	mg/l	6.8	20	ND	6.4	21	5.4	38	6.6	ND	NA	NA	NA
Ammonia Nitrogen	mg/l	ND	ND	0.519	0.576	0.622	0.597	0.157	ND	0.759	NA	NA	NA
Nitrogen (Nitrate/Nitrite)	mg/l	0.47	0.32	0.45	1	1.7	0.29	5.8	0.26	0.32	NA	NA	NA
Total Phosphorus	mg/l	0.05	0.05	0.11	0.14	0.45	0.12	0.23	0.02	0.14	NA	NA	NA
Orthophosphate Phosphorus	mg/l	ND	ND	0.02	0.02	0.02	0.05	0.02	ND	0.05	NA	NA	NA
Fecal Coliform	MPN/100 ml	300	500	ND	2	500	ND	300	23	ND	NA	NA	NA
Fecal Streptococcus Coliform	MPN/100 ml	30	21	ND	2	80	ND	300	240	ND	NA	NA	NA
Total Lead	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND

October 6, 2000
Wet Conditions

	Units	Boston Gatehouse	Agassiz Road Bridge	Longwood Ave. Bridge	Longwood Ave. Drain	Tannery Brook Drain	Village Brook Drain	Daisy Field Drain	Willow Pond Road	Huntington Ave. Drain	Chestnut St. Drain	Emmanuel College Drain	Ipswich Street	Back Bay Yard	Willow Pond Outlet
Turbidity	NTU	2.6	10	12	11	14	4.7	11	12	170	18	34	NA	NA	NA
True Color	A.P.C.U	18	23	18	27	23	18	22	23	19	22	18	NA	NA	NA
Apparent Color	A.P.C.U	24	72	56	58	52	18	72	52	180	85	80	NA	NA	NA
Acidity	mg CaCO3/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	NA	NA	NA
Alkalinity (Total)	mg CaCO3/L	37	39	31	31	20	37	40	19	34	20	16	NA	NA	NA
Total Suspended Solids	mg/l	5.6	80	11	ND	11	ND	8.6	150	640	5.8	43	NA	NA	NA
Ammonia Nitrogen	mg/l	ND	0.093	0.5	0.38	0.246	0.632	1.29	0.103	0.637	0.177	0.195	NA	NA	NA
Nitrogen (Nitrate/Nitrite)	mg/l	0.55	0.55	0.64	2.6	1.1	0.46	3.1	0.45	0.71	0.85	0.64	NA	NA	NA
Total Phosphorus	mg/l	0.04	0.27	0.15	0.11	0.14	0.13	0.4	0.29	1	0.08	0.18	NA	NA	NA
Orthophosphate Phosphorus	mg/l	ND	ND	0.05	0.04	0.07	0.06	0.23	0.01	0.02	0.03	0.01	NA	NA	NA
Fecal Coliform	MPN/100 ml or col/100 ml	50	1,600	49	1,200 (col/100 ml)	6,500 (col/100 ml)	ND (col/100 ml)	22,000 (col/100 ml)	>1,600	>1,600	2,000 (col/100 ml)	2,000 (col/100 ml)	NA	NA	NA
Fecal Streptococcus Coliform	MPN/100 ml	500	>1,600	22	>1,600	>1,600	ND	>1,600	>1,600	900	240	240	NA	NA	NA
Total Lead	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND

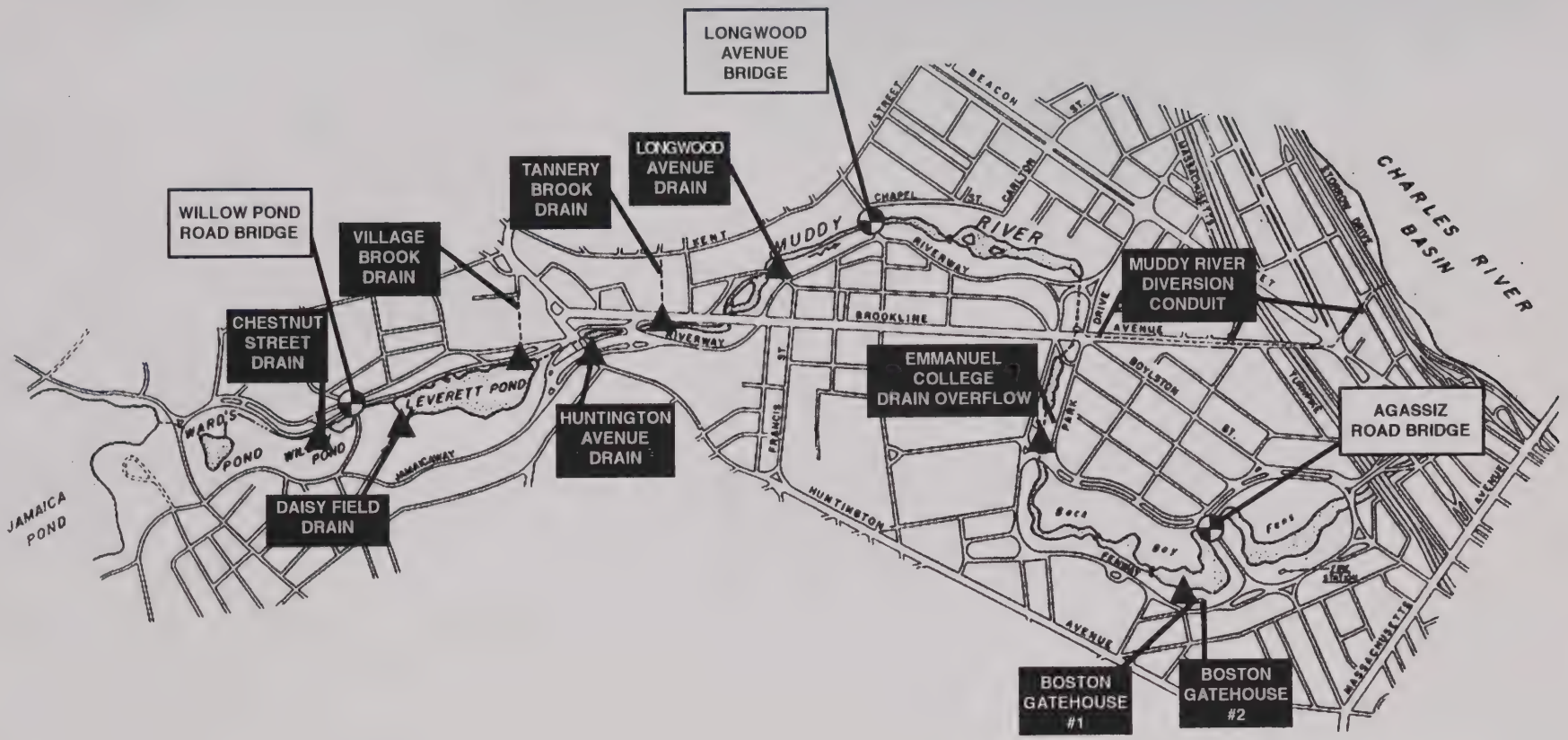
December 14, 2000
Wet Conditions

	Units	Boston Gatehouse	Agassiz Road Bridge	Longwood Ave. Bridge	Longwood Ave. Drain	Tannery Brook Drain	Village Brook Drain	Daisy Field Drain	Willow Pond Road	Huntington Ave. Drain	Chestnut St. Drain	Emmanuel College Drain
Turbidity	NTU	6.7	5.0	54	42	45	24	67	15	68	64	27
True Color	A.P.C.U.	ND	13	17	12	17	6.0	23	7.0	6.0	24	7.0
Apparent Color	A.P.C.U	19	22	48	48	39	47	90	27	90	39	38
Acidity	mg CaCO3/L	ND	ND	2.0	ND	ND	ND	ND	ND	2.0	ND	ND
Alkalinity (Total)	mg CaCO3/L	40	40	17	8.2	18	24	11	35	41	12	32
Total Suspended Solids	mg/l	ND	6.6	62	45	49	18	52	12	210	170	19
Ammonia Nitrogen	mg/l	0.254	0.344	0.659	0.549	0.510	0.465	0.553	0.083	0.551	0.407	0.481
Nitrogen (Nitrate/Nitrite)	mg/l	0.47	0.50	0.39	0.32	0.36	0.34	0.66	1.2	0.54	0.35	0.43
Total Phosphorus	mg/l	0.07	0.06	0.17	0.19	0.16	0.14	0.20	0.11	0.28	0.35	0.12
Orthophosphate Phosphorus	mg/l	0.03	0.01	0.03	0.07	0.04	0.04	0.09	ND	0.01	0.05	0.02
Fecal Coliform	MPN/100 ml	<20	<20	16,000	5,000	16,000	70	3,000	500	3,000	16,000	2,200
Fecal Streptococcus Coliform	MPN/100 ml	<20	40	30,000	30,000	24,000	<20	9,000	330	230	16,000	500

Notes:

NTU - Nephelometric Turbidity Units
A.P.C.U. - Apparent Platinum Color Units
mg CaCO3/L - milligrams of calcium carbonate per liter
mg/l - milligrams per liter
MPN/100 ml - Most Probable Number per 100 milliliters; col/100 ml - colonies per 100 milliliters
>1,600 - greater than the maximum amount of colonies countable via the MPN Method; <20 - less than 20 colonies counted
NA - not analyzed
ND - not detected above Method Detection Limit

FIGURES



Muddy River- Water Quality Sampling Locations

Boston Parks and Recreation Department

Muddy River Phase 1 Improvements & Habitat Enhancement Project

City of Boston/Town of Brookline, Massachusetts

Figure

1

JASON M. CORTELL AND ASSOCIATES INC. (12/11/00)

ATTACHMENT A

CORTELL
ASSOCIATES

July 11, 2000

Steven G. Lipman, P.E.
Department of Environmental Protection
One Winter Street
Boston, MA 02108

re: Muddy River Restoration Project, Water Quality Sampling Plan

Dear Mr. Lipman:

The following is provided in response to your comment letter on the Muddy River Water Quality Sampling Plan. The attached water quality summary was prepared in order to clarify the extent of the most recent water quality data base and to more informatively respond to your comments. The data consists of information from the Charles River Watershed Association for October 27,1998 and the USGS data from the Nederlands Road gaging station for the period of June 1999 through May 2000. Because the City of Boston and Town of Brookline have made substantial improvements in eliminating illegal connections, making corrections at inter-municipal connections, and sewer separation work, the older EPA and DEP data are no longer representative of water quality.

Therefore, not only is the existing data base limited in time, it is also limited in the geographic extent of the Muddy River which it covers. Hence, the reason for obtaining "up-to-date and synoptic water quality data along the Muddy River. The CRWA and USGS data show a limited number of instances where bacteria exceed the water quality standard. The data clearly show elevated nutrient conditions but limited solids concentrations.

The proposed sampling locations and time intervals are more extensive than the one-time sampling by the CRWA or the one sampling location by the USGS. The proposed sampling plan includes 11 sampling locations for three periods including wet and dry. The sampling will be conducted during July, August, and October.

JASON M. CORTELL AND ASSOCIATES INC. Environmental Consultants and Planners 244 Second Avenue Waltham, Massachusetts 02451-1177
Tel 781/890-3737 Fax 781/890-3430 cortell@cortell.com

The data will be used for several purposes. First, it will be used to describe the existing water quality conditions from the Charles River to Willow Pond. Second, through the water quality data and hydrologic modeling it will be able to establish the degree of contamination from the drainage sources. This cannot be accomplished with the existing data. In terms of project planning, the water quality data will be used to determine where BMPs should be prioritized and for which water quality constituents e.g. solids, bacteria, nutrients. The information will also allow an assessment to be conducted of the effectiveness of the proposed dredging and BMPs in improving water quality. The data will also be used to assess the impact of other water quality improvement alternatives being considered as part of the project..

We hope that this provides you with the information you need as we are anxious to commence the monitoring

If you have any questions or need further information, please do not hesitate to contact me 781, 890-3737 x128.

Sincerely,

JASON M. CORTELL and ASSOCIATES INC.

Carlton L. Noyes
Deputy Project Manager

cc: Frances G. Beatty - BPRD
John F. Burckhardt – BPRD
Bruce R. Conklin - CDM

CHARLES RIVER WATERSHED ASSOCIATION
Water Quality Sampling Stations
October 27, 1998

MUD 1	Inlet to Wards Pond from Jamaica Pond
MUD 2	Outlet from Willow Pond
MUD 3	Leverett Pond at Village Brook Drain
MUD 4	Outlet from Leverett Pond
MUD 5	Muddy River at Brookline Avenue
MUD 6	Muddy River at Longwood Avenue
MUD 7	Muddy River at Back Bay Yard
MUD 8	Muddy River at Avenue Louis Pasteur
MUD 9	Muddy River at Footbridge
MUD 10	Muddy River at Boston Gatehouse
MUD 11	Muddy River at Agassiz Road
MUD 12	Muddy River at Commonwealth Avenue

Charles River Watershed Association Muddy River Data Report - October 27, 1998													
	Units	MUD1	MUD2	MUD3	MUD4	MUD5	MUD6	MUD7	MUD8	MUD9	MUD10	MUD11	MUD12
Fecal Coliform	CFU/100 ml	110	30	<10	100	2,600	<10	<10	210	280	4,800	800	1,100
Nitrite as N.	mg/l	<0.10	<0.10	0.26	0.27	0.28	0.25	0.26	0.27	<0.10	0.34	<0.10	<0.10
Nitrate as N.	mg/l	0.1	0.74	0.71	0.69	0.78	0.61	0.6	0.65	0.77	1.6	1.3	1.4
Chloride	mg/l	87	100	55	64	94	75	73	79	85	140	130	140
Total Phosphorus	mg/l	<0.05	<0.05	0.25	0.27	0.13	0.1	0.11	0.08	<0.05	<0.05	0.06	<0.05
Orthophosphate as P.	mg/l	<0.10	<0.10	0.12	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TSS	mg/l	<4.0	<4.0	56	75	4.6	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	5.4
Specific Conductance (lab)	uS/cm	350	480	320	350	440	380	370	380	400	610	570	610
Salinity	ppt	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
BOD	mg/l	<2.0	<2.0	<2.0	4.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

Notes: Samples collected on October 27, 1998 at locations shown on the attached figure. Samples collected during dry weather flow.

TSS - total suspended solids
BOD - biochemical oxygen demand

CFU/100 ml - coliforms per 100 milliliters
mg/l - milligrams per liter (ppm - parts per million)
ppt - parts per thousand
uS/cm - microSiemens per centimeter

USGS Station # 01104683 Muddy River @ Nederlands Road - Brookline, Massachusetts													
Date Collected	Units	*6/24/99*	*7/19/99*	*7/27/99*	*8/26/99*	*9/27/99*	*10/26/99*	*11/19/99*	*12/29/99*	*1/24/00*	*2/24/00*	*3/24/00*	*5/1/00*
Fecal Coliform	CFU/100 ml	20	<10	NA	<10	NA	20	<10	<10	NA	NA	NA	250
Enterococcus	CFU/100 ml	10	<10	NA	<10	NA	<10	20	<10	NA	NA	NA	160
Nitrite:Nitrate	mg/l	NA	0.3	NA	0.27	0.5	0.72	0.53	1.1	1	1.3	1.5	NA
Total Ammonia	mg/l	NA	0.5	NA	NA	0.62	0.46	0.558	0.53	0.64	0.44	0.28	0.256
Total TKN	mg/l	NA	1.2	NA	NA	1.1	1.1	1.1	0.91	1.3	1.1	1.4	1.1
Total Phosphorus	mg/l	NA	0.12	NA	0.12	0.11	0.1	0.12	0.1	0.16	0.14	0.1	NA
Total Cadmium	ug/l	<0.05	<0.05	NA	NA	NA	0.2	0.2	0.2	0.2	0.2	0.5	NA
Total Chromium	ug/l	0.96	0.73	NA	NA	NA	2	2	2	2	5	2	NA
Total Copper	ug/l	4.7	5.6	NA	NA	NA	7	6	6	5	9	6.2	NA
Total Lead	ug/l	2.6	4.7	NA	NA	NA	6.3	3.9	3.3	3.6	4.8	3.4	NA
Total Zinc	ug/l	<10	11.9	NA	NA	NA	14.9	9.7	14.2	19.6	30.2	15.1	NA
Turbidity (field)	NTU	NA	22	7	5	5	NA	NA	NA	NA	NA	NA	NA
Turbidity (lab)	NTU	NA	NA	NA	NA	NA	5.33	NA	2.62	12.6	NA	NA	NA
TSS	mg/l	10.7	4.8	NA	4.8	7.8	7.2	5	3.2	5.2	5.8	NA	NA
TDS	mg/l	547	196	NA	176	224	218	204	324	525	6,269	NA	NA
Specific Conductance (field)	uS/cm	NA	NA	316	NA	352	NA	NA	NA	NA	NA	NA	NA
Specific Conductance (lab)	uS/cm	NA	358	311	270	NA	401	NA	74.9	860	NA	NA	NA
Salinity	ppt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BOD	mg/l	NA	2.2	NA	NA	<2	2	2	2	4.6	2	2	2
DO	mg/l	NA	5.9	3.7	5.9	6.9	NA	NA	NA	NA	NA	NA	NA
pH	standard units	NA	7.3	6.6	7	6.6	NA	NA	NA	NA	NA	NA	NA

Notes:

Data PROVISIONAL. All samples collected during dry weather flow.

TKN - total kjeldehl nitrogen
TSS - total suspended solids
TDS - total dissolved solids
BOD - biochemical oxygen demand
DO - dissolved oxygen

CFU/100 ml - coliforms per 100 milliliters
mg/l - milligrams per liter (ppm - parts per million)
ug/l - micrograms per liter (ppb - parts per billion)
ppt - parts per thousand
NTU - Nephelometric turbidity units
uS/cm - microSiemens per centimeter
NA - not analyzed

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

May 3, 2000

Bruce Conklin
Camp, Dresser & McKee, Inc.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Re: Muddy River Restoration Project, Water Quality Sampling Plan

Dear Mr. Conklin:

In response to an April 25, 2000 request to the Department of Environmental Protection (DEP) for expedited review and comment of the Draft 4-17-00 Muddy River Phase I, Flood Control, Water Quality and Habitat Enhancement Project, Water Quality Sampling Plan, this writer has performed an initial review of this document and submits the following comments.

Comments

The Objective and Reporting Sections of the Draft are indicated below.

Objective

"The objective of this Water Quality Sampling Plan is to obtain up-to-date and synoptic water quality data along the Muddy River for use in the development of construction mitigation measures and for project permitting. This will allow the existing data base to be expanded and to include water quality parameters for which analyses have not been conducted in the past."

Reporting

"These results will be tabulated and the mean and range in concentration will be included. The data base will be compared against applicable water quality standards and will also be used in preparation of construction mitigation measures and environmental permitting. The Muddy

River data base which will include all data sources, will also be used to assess the feasibility of various Best Management Practices to enhance future water quality conditions." (emphasis added)

Even after reading these sections of the Plan it is still unclear, at least to this writer, exactly how the data from this very limited sampling program will be incorporated into project planning. Please provide more detailed information.

In addition, I suggest that the "existing water quality data gathering activity" be performed as soon as possible and that fully reviewed (e.g. QC) and assessed, and the scope of work for the additional sampling be determined based on filling-in necessary data gaps to allow for attaining the specific objectives and goals of the study.

I have distributed the Draft Plan to other DEP staff for review and comment and I will provide any further comments directly to you.

Very truly yours,

Steven G. Lipman, P.E.
Special Projects Coordinator

SGL/wp
Conklin

CC: Carl Noyes, Cortell and Assoc.
Rachel Freed, DEP/WW

MUDDY RIVER PHASE I
FLOOD CONTROL, WATER QUALITY AND HABITAT ENHANCEMENT PROJECT

WATER QUALITY SAMPLING PLAN

Objective

The objective of this Water Quality Sampling Plan is to obtain up-to-date and synoptic water quality data along the Muddy River for use in the development of construction mitigation measures and for project permitting. This will allow the existing data base to be expanded and to include water quality parameters for which analyses have not been conducted in the past.

Methodology

The Project proposes to collect water samples from three representative locations during one wet and two dry weather events. The water sampling will be conducted once each month in April/May, August, and October.
(dry) (wet) (dry)

Instantaneous grab samples will be collected from each of the River sections between roadway crossings and from eight of the major outfalls. The proposed sampling locations are:

- Muddy River at Agassiz Road Bridge
- Muddy River at the Longwood Avenue Bridge
- Muddy River at the Willow Road Bridge
- Outfalls
  1. Boston Gate House
  2. Emmanuel College Drain
  3. Longwood Avenue Drain
  4. Tannery Brook Drain
  5. Huntington Avenue Drain
  6. Village Brook Drain
  7. Daisy Field Drain
  8. Chestnut Street Drain

The sampling locations are shown on Figure 1.

Water quality analyses will be conducted for: add Enterococci ??

- Fecal Coliform Bacteria
- Total Suspended Solids
- pH (field)
- Alkalinity
- Temperature (field)
- Dissolved Oxygen (field)
- Total Phosphorus
- Ortho Phosphorus
- Ammonia Nitrogen
- Nitrate-nitrite Nitrogen

The following QA/QC procedures shall be conducted during sample collection and analysis:

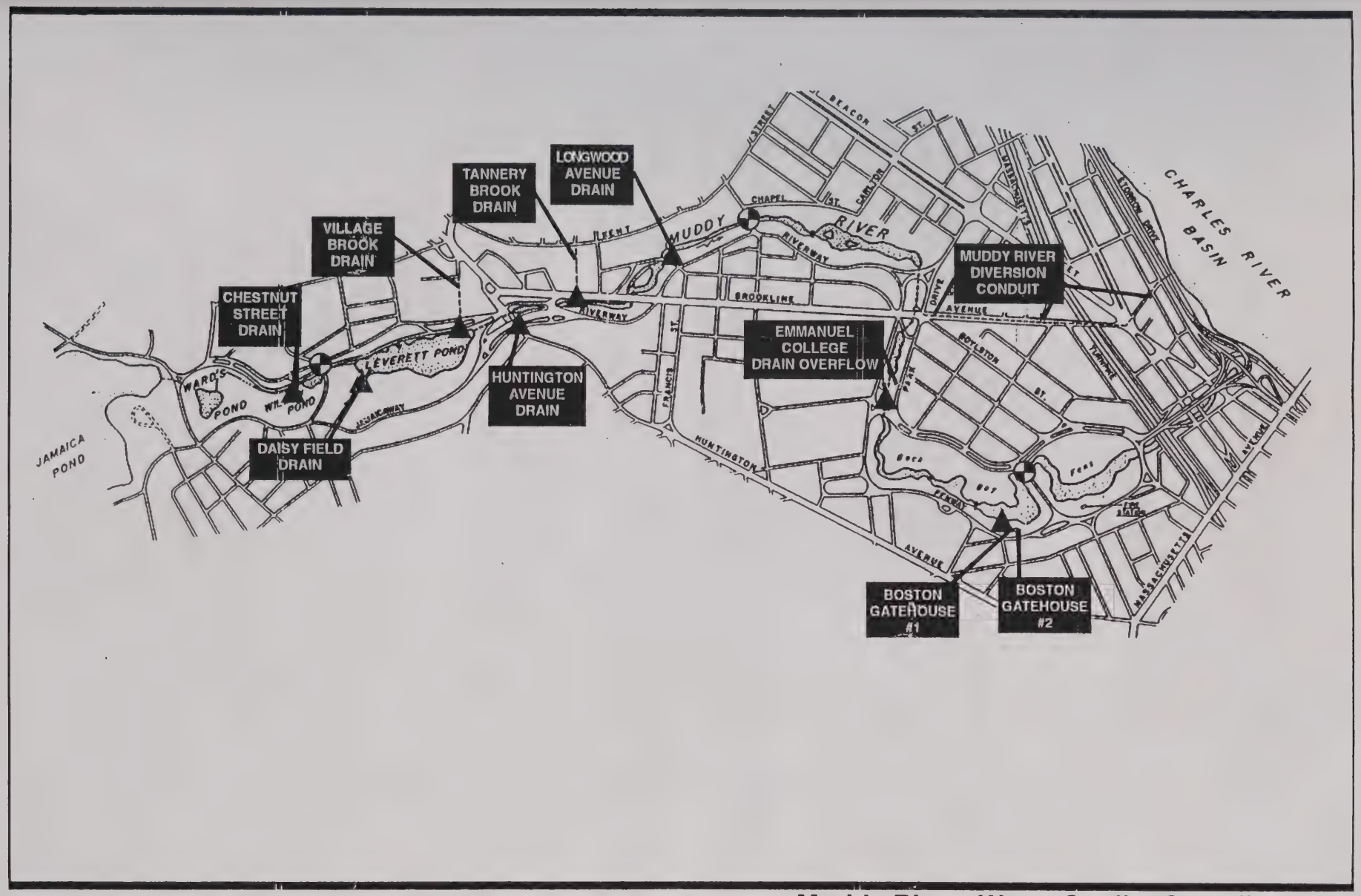
- Field and Laboratory Chain of Custody
- DEP Certified Analytical Laboratory
- EPA/DEP approved analytical procedures
- Trip Blanks – One trip blank for each day of sample collection
- Laboratory Blanks for each day of sample collection.
- Matrix Spikes for each day of sample collection
- Matrix Spike Duplicates for each day of sample collection.

In addition, the existing water quality data base will be assembled from the following data sources:

- U.S. Environmental Protection Agency
- U.S. Army Corps of Engineers
- U.S. Geological Survey
- Department of Environmental Protection
- City of Boston
- Town of Brookline
- Northeastern University
- Restore Olmsted's Waterway
- Muddy River Coalition
- Emerald Necklace Conservancy

Reporting

These results will be tabulated and the mean and range in concentration will be included. The data base will be compared against applicable water quality standards and will also be used in preparation of construction mitigation measures and environmental permitting. The Muddy River data base which will include all data sources, will also be used to assess the feasibility of various Best Management Practices to enhance future water quality conditions.



Muddy River- Water Quality Sampling Plan

Boston Parks and Recreation Department

Emerald Necklace Environmental Improvements Master Plan

City of Boston/Town of Brookline, Massachusetts

Figure

1

JASON M. CORTELL AND ASSOCIATES INC. (4/17/00)

MUDDY RIVER PHASE I
FLOOD CONTROL, WATER QUALITY AND HABITAT ENHANCEMENT PROJECT

WATER QUALITY SAMPLING PLAN

Objective

The objective of this Water Quality Sampling Plan is to obtain up-to-date and synoptic water quality data along the Muddy River for use in the development of construction mitigation measures and for project permitting. This will allow the existing data base to be expanded and to include water quality parameters for which analyses have not been conducted in the past.

Methodology

The Project proposes to collect water samples from three representative locations during one wet and two dry weather events. The water sampling will be conducted once each month in April/May, August, and October.

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- Muddy River at Agassiz Road Bridge
- Muddy River at the Longwood Avenue Bridge
- Muddy River at the Willow Pond Road Bridge
- Outfalls
    1. Boston Gate House
    2. Emmanuel College Drain
    3. Longwood Avenue Drain
    4. Tannery Brook Drain
    5. Huntington Avenue Drain
    6. Village Brook Drain
    7. Daisy Field Drain
    8. Chestnut Street Drain

The sampling locations are shown on Figure 1.

Water quality analyses will be conducted for:

- Fecal Coliform Bacteria
- Fecal Streptococcus Bacteria
- Total Suspended Solids
- True and Apparent Color
- Turbidity
- pH (field)
- Alkalinity
- Acidity
- Temperature (field)
- Dissolved Oxygen (field)
- Total Phosphorus
- Ortho Phosphorus
- Ammonia Nitrogen
- Nitrate-nitrite Nitrogen

Water samples shall also be collected from the following locations and analyzed for total lead. These samples shall be collected during the dry weather sampling event.

Willow Pond Outlet
Muddy River at the trash rack at the Riverway
Ipswich Street.

The following QA/QC procedures shall be conducted during sample collection and analysis:

- Field and Laboratory Chain of Custody
- DEP Certified Analytical Laboratory
- EPA/DEP approved analytical procedures
- Trip Blanks – One trip blank for each day of sample collection
- Laboratory Blanks for each day of sample collection.
- Matrix Spikes for each day of sample collection
- Matrix Spike Duplicates for each day of sample collection.

In addition, the existing water quality data base will be assembled from the following data sources:

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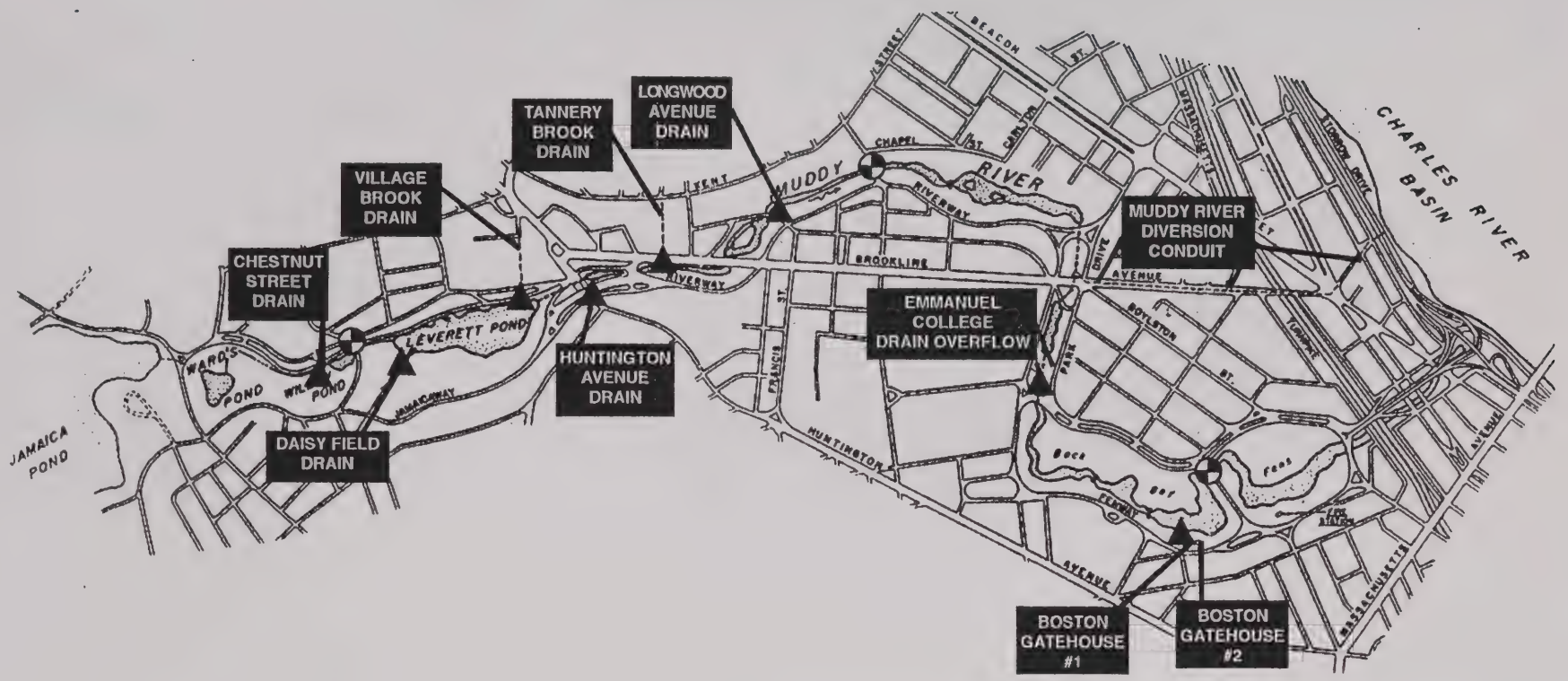
- U.S. Army Corps of Engineers
- U.S. Geological Survey
- Department of Environmental Protection
- City of Boston
- Town of Brookline
- Northeastern University
- Restore Olmsted's Waterway
- Muddy River Coalition
- Emerald Necklace Conservancy

Reporting

These results will be tabulated and the mean and range in concentration will be included. The data base will be compared against applicable water quality standards and will also be used in preparation of construction mitigation measures and environmental permitting. The Muddy River data base which will include all data sources, will also be used to assess the feasibility of various Best Management Practices to enhance future water quality conditions.



Muddy River- Water Quality Sampling Plan

Boston Parks and Recreation Department

Muddy River Phase 1 Improvements & Habitat Enhancement Project

City of Boston/Town of Brookline, Massachusetts

Figure

2

JASON M. CORTELL AND ASSOCIATES INC (4/17/00)

ATTACHMENT B

West

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65 NY:11148

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 1 Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Attn: Bruce Conklin

Project Number: 20300.001.004

Site: MUDDY RIVER

Laboratory Job Number: L0011589

Invoice Number: 49133

Date Received: 14-DEC-00

Date Reported: 21-DEC-00

Delivery Method: Client

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0011589-01	AGASSIZ ROAD BRIDGE	BOSTON / BROOKLINE
L0011589-02	BOSTON GATE HOUSE	BOSTON / BROOKLINE
L0011589-03	EMMANUEL COLLEGE DRAIN	BOSTON / BROOKLINE
L0011589-04	LONGWOOD AVENUE DRAIN	BOSTON / BROOKLINE
L0011589-05	LONGWOOD AVENUE BRIDGE	BOSTON / BROOKLINE
L0011589-06	TANNERY BROOK DRAIN	BOSTON / BROOKLINE
L0011589-07	HUNTINGTON AVENUE DRAIN	BOSTON / BROOKLINE
L0011589-08	DAISY FIELD DRAIN	BOSTON / BROOKLINE
L0011589-09	CHESNUT STREET DRAIN	BOSTON / BROOKLINE
L0011589-10	WILLOW POND ROAD BRIDGE	BOSTON / BROOKLINE
L0011589-11	VILLAGE BROOK DRAIN	BOSTON / BROOKLINE

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by: Scott McLean

Scott McLean - Laboratory Director
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-01
AGASSIZ ROAD BRIDGE
Sample Matrix: WATER

Date Collected: 14-DEC-2000 12:00
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	5.0	NTU	0.20	30 2130B		1214 19:30	AC
Color, True	13.	A.P.C.U.	5.0	30 2120B		1214 19:35	AC
Color, Apparent	22.	A.P.C.U.	5.0	30 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	30 2310B		1219 16:00	MA
Alkalinity, Total	40.	mg CaCO3/L	2.0	30 2320B		1220 10:20	MA
Solids, Total Suspended	6.6	mg/l	5.0	30 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.344	mg/l	0.075	30 4500NH3-BM		1219 10:53	ED
Nitrogen, Nitrate/Nitrite	0.50	mg/l	0.10	30 4500NO3-F		1215 20:10	DE
Phosphorus, Total	0.06	mg/l	0.01	30 4500P-B		1220 18:00	JT
Phosphorus, Orthophosphate	0.01	mg/l	0.01	30 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	<20	MPN/100ml	20	30 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	40.	MPN/100ml	20.	30 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-02
BOSTON GATE HOUSE
Sample Matrix: WATER
Date Collected: 14-DEC-2000 12:10
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	6.7	NTU	0.20	30 2130B		1214 19:30	AC
Color, True	ND	A.P.C.U.	5.0	30 2120B		1214 19:35	AC
Color, Apparent	19.	A.P.C.U.	5.0	30 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	30 2310B		1219 14:00	MA
Alkalinity, Total	40.	mg CaCO3/L	2.0	30 2320B		1220 10:20	MA
Solids, Total Suspended	ND	mg/l	5.0	30 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.254	mg/l	0.075	30 4500NH3-BH		1219 10:54	ED
Nitrogen, Nitrate/Nitrite	0.47	mg/l	0.10	30 4500NO3-F		1215 20:11	DE
Phosphorus, Total	0.07	mg/l	0.01	30 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.03	mg/l	0.01	30 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	<20	MPN/100ml	20	30 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	<20	MPN/100ml	20	30 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-03
EMMANUEL COLLEGE DRAIN
Sample Matrix: WATER
Date Collected: 14-DEC-2000 12:40
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	27.	NTU	0.20	30 2130B		1214 19:30	AC
Color, True	7.0	A.P.C.U.	5.0	30 2120B		1214 19:35	AC
Color, Apparent	38.	A.P.C.U.	5.0	30 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	30 2310B		1219 14:00	MA
Alkalinity, Total	32.	mg CaCO3/L	2.0	30 2320B		1220 10:20	MA
Solids, Total Suspended	19.	mg/l	5.0	30 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.481	mg/l	0.075	30 4500NH3-BH		1219 10:55	ED
Nitrogen, Nitrate/Nitrite	0.43	mg/l	0.10	30 4500NO3-F		1215 20:17	DE
Phosphorus, Total	0.12	mg/l	0.01	30 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.02	mg/l	0.01	30 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	2200	MPN/100ml	20.	30 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	500	MPN/100ml	20.	30 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-04
LONGWOOD AVENUE DRAIN
Sample Matrix: WATER

Date Collected: 14-DEC-2000 13:00
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000

Condition of Sample: Satisfactory
Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	42.	NTU	0.20	SM 2130B		1214 19:30	AC
Color, True	12.	A.P.C.U.	5.0	SM 2120B		1214 19:35	AC
Color, Apparent	48.	A.P.C.U.	5.0	SM 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	SM 2310B		1219 14:00	MA
Alkalinity, Total	8.2	mg CaCO3/L	2.0	SM 2320B		1220 10:20	MA
Solids, Total Suspended	45.	mg/l	10.	SM 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.549	mg/l	0.075	SM 4500NH3-BH		1219 11:05	ED
Nitrogen, Nitrate/Nitrite	0.32	mg/l	0.10	SM 4500NO3-F		1215 20:17	DE
Phosphorus, Total	0.19	mg/l	0.01	SM 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.07	mg/l	0.01	SM 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	5000	MPN/100ml	20.	SM 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	30000	MPN/100ml	200	SM 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-05
LONGWOOD AVENUE BRIDGE
Sample Matrix: WATER

Date Collected: 14-DEC-2000 13:10
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000

Condition of Sample: Satisfactory
Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	54.	NTU	0.20	SM 2130B		1214 19:30	AC
Color, True	17.	A.P.C.U.	5.0	SM 2120B		1214 19:35	AC
Color, Apparent	48.	A.P.C.U.	5.0	SM 2120B		1214 19:20	AC
Acidity	2.0	mg CaCO3/L	2.0	SM 2310B		1219 14:00	MA
Alkalinity, Total	17.	mg CaCO3/L	2.0	SM 2320B		1220 10:20	MA
Solids, Total Suspended	62.	mg/l	10.	SM 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.659	mg/l	0.075	SM 4500NH3-BH		1219 10:56	ED
Nitrogen, Nitrate/Nitrite	0.39	mg/l	0.10	SM 4500NO3-F		1216 20:16	DE
Phosphorus, Total	0.17	mg/l	0.01	SM 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.03	mg/l	0.01	SM 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	16000	MPN/100ml	20.	SM 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	30000	MPN/100ml	200	SM 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-06
Sample Matrix: TANNERY BROOK DRAIN WATER
Date Collected: 14-DEC-2000 13:18
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	45.	NTU	0.20	SM 2130B		1214 19:30	AC
Color, True	17.	A.P.C.U.	5.0	SM 2120B		1214 19:35	AC
Color, Apparent	39.	A.P.C.U.	5.0	SM 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	SM 2310B		1219 14:00	MA
Alkalinity, Total	18.	mg CaCO3/L	2.0	SM 2320B		1220 10:20	MA
Solids, Total Suspended	49.	mg/l	10.	SM 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.510	mg/l	0.075	SM 4500NH3-BH		1219 10:57	ED
Nitrogen, Nitrate/Nitrite	0.36	mg/l	0.10	SM 4500NO3-F		1215 20:19	DE
Phosphorus, Total	0.16	mg/l	0.01	SM 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.04	mg/l	0.01	SM 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	16000	MPN/100ml	20.	SM 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	24000	MPN/100ml	200	SM 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-07
Sample Matrix: HUNTINGTON AVENUE DRAIN WATER
Date Collected: 14-DEC-2000 13:35
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	68.	NTU	0.20	SM 2130B		1214 19:30	AC
Color, True	6.0	A.P.C.U.	5.0	SM 2120B		1214 19:35	AC
Color, Apparent	90.	A.P.C.U.	10.	SM 2120B		1214 19:20	AC
Acidity	2.0	mg CaCO3/L	2.0	SM 2310B		1219 14:00	MA
Alkalinity, Total	41.	mg CaCO3/L	2.0	SM 2320B		1220 10:20	MA
Solids, Total Suspended	210	mg/l	10.	SM 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.551	mg/l	0.075	SM 4500NH3-BH		1219 10:58	ED
Nitrogen, Nitrate/Nitrite	0.54	mg/l	0.10	SM 4500NO3-F		1215 20:19	DE
Phosphorus, Total	0.28	mg/l	0.01	SM 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.01	mg/l	0.01	SM 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	3000	MPN/100ml	20.	SM 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	230	MPN/100ml	20.	SM 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-08 DAISY FIELD DRAIN
Sample Matrix: WATER
Date Collected: 14-DEC-2000 14:00
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	67.	NTU	0.20	SM 2130B		1214 19:30	AC
Color, True	23.	A.P.C.U.	5.0	SM 2120B		1214 19:35	AC
Color, Apparent	90.	A.P.C.U.	10.	SM 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	SM 2310B		1219 14:00	MA
Alkalinity, Total	11.	mg CaCO3/L	2.0	SM 2320B		1220 10:20	MA
Solids, Total Suspended	52.	mg/l	10.	SM 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.553	mg/l	0.075	SM 4500NH3-BH		1219 10:59	ED
Nitrogen, Nitrate/Nitrite	0.66	mg/l	0.10	SM 4500NO3-F		1215 20:20	DH
Phosphorus, Total	0.20	mg/l	0.01	SM 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.09	mg/l	0.01	SM 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	3000	MPN/100ml	20.	SM 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	9000	MPN/100ml	20.	SM 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-09 CHESNUT STREET DRAIN
Sample Matrix: WATER
Date Collected: 14-DEC-2000 14:10
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	64.	NTU	0.20	SM 2130B		1214 19:30	AC
Color, True	24.	A.P.C.U.	5.0	SM 2120B		1214 19:35	AC
Color, Apparent	39.	A.P.C.U.	5.0	SM 2120B		1214 19:20	AC
Acidity	ND	mg CaCO3/L	2.0	SM 2310B		1219 14:00	MA
Alkalinity, Total	12.	mg CaCO3/L	2.0	SM 2320B		1220 10:20	MA
Solids, Total Suspended	170	mg/l	5.0	SM 2540D		1220 16:30	DT
Nitrogen, Ammonia	0.407	mg/l	0.075	SM 4500NH3-BH		1219 11:05	ED
Nitrogen, Nitrate/Nitrite	0.35	mg/l	0.10	SM 4500NO3-F		1215 20:21	DH
Phosphorus, Total	0.35	mg/l	0.01	SM 4500P-E		1220 18:00	JT
Phosphorus, Orthophosphate	0.05	mg/l	0.01	SM 4500P-E		1214 21:10	JT
Coliform, Fecal (MPN)	16000	MPN/100ml	20.	SM 9221E		1214 18:00	AB
Coliform, Fecal Strep (MPN)	16000	MPN/100ml	20.	SM 9230B		1214 19:30	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-10
WILLOW POND ROAD BRIDGE
Sample Matrix: WATER

Date Collected: 14-DEC-2000 14:30
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	15.	NTU	0.20	30 2130B		1214	19:30 AC
Color, True	7.0	A.P.C.U.	5.0	30 2120B		1214	19:35 AC
Color, Apparent	27.	A.P.C.U.	5.0	30 2120B		1214	19:20 AC
Acidity	ND	mg CaCO3/L	2.0	30 2310B		1219	14:00 MA
Alkalinity, Total	35.	mg CaCO3/L	2.0	30 2320B		1220	10:20 MA
Solids, Total Suspended	12.	mg/l	5.0	30 2540D		1220	16:30 DT
Nitrogen, Ammonia	0.083	mg/l	0.075	30 4500NH3-BH		1219	11:03 ED
Nitrogen, Nitrate/Nitrite	1.2	mg/l	0.10	30 4500NO3-F		1215	20:21 DE
Phosphorus, Total	0.11	mg/l	0.01	30 4500P-E		1220	18:00 JT
Phosphorus, Orthophosphate	ND	mg/l	0.01	30 4500P-E		1214	21:10 JT
Coliform, Fecal (MPN)	500	MPN/100ml	20.	30 9221E		1214	16:00 AB
Coliform, Fecal Strep (MPN)	330	MPN/100ml	20.	30 9230B		1214	19:30 AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0011589-11
VILLAGE BROOK DRAIN
Sample Matrix: WATER

Date Collected: 14-DEC-2000 14:45
Date Received : 14-DEC-2000
Date Reported : 21-DEC-2000

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Turbidity	24.	NTU	0.20	30 2130B		1214	19:30 AC
Color, True	6.0	A.P.C.U.	5.0	30 2120B		1214	19:35 AC
Color, Apparent	47.	A.P.C.U.	5.0	30 2120B		1214	19:20 AC
Acidity	ND	mg CaCO3/L	2.0	30 2310B		1219	14:00 MA
Alkalinity, Total	24.	mg CaCO3/L	2.0	30 2320B		1220	10:20 MA
Solids, Total Suspended	18.	mg/l	5.0	30 2540D		1220	16:30 DT
Nitrogen, Ammonia	0.465	mg/l	0.075	30 4500NH3-BH		1219	11:04 ED
Nitrogen, Nitrate/Nitrite	0.34	mg/l	0.10	30 4500NO3-F		1215	19:18 DE
Phosphorus, Total	0.14	mg/l	0.01	30 4500P-E		1220	18:00 JT
Phosphorus, Orthophosphate	0.04	mg/l	0.01	30 4500P-E		1214	21:10 JT
Coliform, Fecal (MPN)	70.	MPN/100ml	20.	30 9221E		1214	16:00 AB
Coliform, Fecal Strep (MPN)	<20	MPN/100ml	20	30 9230B		1214	19:30 AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0011589

Parameter	Value 1	Value 2	RPD	Units
Turbidity for sample(s) 01-11 (L0011589-11, WG72251)				
Turbidity	24.	24.	0	NTU
Color, True for sample(s) 01-11 (L0011589-11, WG72255)				
Color, True	6.0	6.0	0	A.P.C.U.
Color, Apparent for sample(s) 01-11 (L0011589-01, WG72254)				
Color, Apparent	22.	22.	0	A.P.C.U.
Acidity for sample(s) 01-11 (L0011589-11) WG72494)				
Acidity	ND	ND	NC	mg CaCO3/L
Alkalinity, Total for sample(s) 01-11 (L0011598-03, WG72646)				
Alkalinity, Total	270	270	0	mg CaCO3/L
Solids, Total Suspended for sample(s) 01-11 (L0011589-01, WG72610)				
Solids, Total Suspended	6.6	7.8	17	mg/l
Nitrogen, Ammonia for sample(s) 01-11 (L0011585-01, WG72403)				
Nitrogen, Ammonia	1.62	1.49	8	mg/l
Nitrogen, Nitrate/Nitrite for sample(s) 01-11 (L0011589-01, WG72302)				
Nitrogen, Nitrate/Nitrite	0.50	0.50	0	mg/l
Phosphorus, Total for sample(s) 01-11 (L0011589-08, WG72670)				
Phosphorus, Total	0.20	0.21	5	mg/l
Phosphorus, Orthophosphate for sample(s) 01-11 (L0011589-08, WG72257)				
Phosphorus, Orthophosphate	0.09	0.09	0	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0011589

Parameter	% Recovery
Turbidity LCS for sample(s) 01-11 (WG72251)	
Turbidity	110
Acidity LCS for sample(s) 01-11 (WG72494)	
Acidity	102
Alkalinity, Total LCS for sample(s) 01-11 (WG72648)	
Alkalinity, Total	102
Nitrogen, Ammonia LCS for sample(s) 01-11 (WG72403)	
Nitrogen, Ammonia	98
Nitrogen, Nitrate/Nitrite LCS for sample(s) 01-11 (WG72302)	
Nitrogen, Nitrate/Nitrite	92
Phosphorus, Total LCS for sample(s) 01-11 (WG72670)	
Phosphorus, Total	99
Phosphorus, Orthophosphate LCS for sample(s) 01-11 (WG72257)	
Phosphorus, Orthophosphate	99
Alkalinity, Total SPIKE for sample(s) 01-11 (L0011598-04, WG72648)	
Alkalinity, Total	101
Nitrogen, Ammonia SPIKE for sample(s) 01-11 (L0011589-01, WG72403)	
Nitrogen, Ammonia	95
Nitrogen, Nitrate/Nitrite SPIKE for sample(s) 01-11 (L0011589-11, WG72302)	
Nitrogen, Nitrate/Nitrite	103
Phosphorus, Total SPIKE for sample(s) 01-11 (L0011589-01, WG72670)	
Phosphorus, Total	103
Phosphorus, Orthophosphate SPIKE for sample(s) 01-11 (L0011589-01, WG72257)	
Phosphorus, Orthophosphate	98

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0011589

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01-11							
Turbidity	ND	NTU	0.20	30 2130B		1214 19:30	AC
Blank Analysis for sample(s) 01-11							
Acidity	ND	mg CaCO3/L	2.0	30 2310B		1219 14:00	MA
Blank Analysis for sample(s) 01-11							
Alkalinity, Total	ND	mg CaCO3/L	2.0	30 2320B		1220 10:20	MA
Blank Analysis for sample(s) 01-11							
Solids, Total Suspended	ND	mg/l	5.0	30 2540D		1220 16:30	DT
Blank Analysis for sample(s) 01-11							
Nitrogen, Ammonia	ND	mg/l	0.075	30 4500NH3-BH		1219 10:46	WD
Blank Analysis for sample(s) 01-11							
Nitrogen, Nitrate/Nitrite	ND	mg/l	0.10	30 4500NO3-F		1215 19:15	DE
Blank Analysis for sample(s) 01-11							
Phosphorus, Total	ND	mg/l	0.01	30 4500P-E		1220 18:00	JT
Blank Analysis for sample(s) 01-11							
Phosphorus, Orthophosphate	ND	mg/l	0.01	30 4500P-E		1214 21:10	JT
Blank Analysis for sample(s) 01-11							
Coliform, Fecal (MPN)	ND	MPN/100ml	2.0	30 9221E		1214 18:00	AB
Blank Analysis for sample(s) 01-11							
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30 9230B		1214 19:30	AB

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 3795

Sheet ____ of ____

ALPHA Job #: Q011589

Date Rec'd in Lab: 12-14-00

Date Due: [illegible]

Client Name: CAMP DRESSER & MCKEE, INC.
Client Address: ONE CAMBRIDGE PLACE-50 HAMPSHIRE ST. CAMBRIDGE, MA. 02139
Phone #: (617) 452-6330 FAX #: (617) 452-8330

Project Name: MUDDY RIVER
Project Location: BOSTON/BROOKLINE
Project #: 20309.001.004
Project Manager: BRUCE CONKLIN/ CARLE KASUKK

Report To: BRUCE CONKLIN
Bill To: CDM (SEE CLIENT ADDRESS)
PO#:

☑ Standard TAT
☐ RUSH TAT ____ (# DAYS)
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

ALPHA Lab#	Sample ID	Matrix/Source*	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	Fecal Coliform/Strep Fecalis	TSS / Turbidity	Turb & Apparent Color	Alkalinity / Acidity	Total Phos. / Ortho Phos	Ammonia Nitrogen	Nitrate-Nitrite Nitrogen			
11587-1	AGASSIZ ROAD BRIDGE	RO/SW	12/14/00	1200	IV	N	X	X	X	X	X	X	X			
2	BOSTON GATE HOUSE			1210	IV	N	X	X	X	X	X	X	X			
3	EMMANUEL COLLEGE DRAIN			1240	IV	N	X	X	X	X	X	X	X			
4	LONGWOOD AVENUE DRAIN			1300	IV	N	X	X	X	X	X	X	X			
5	LONGWOOD AVENUE BRIDGE			1310	IV	N	X	X	X	X	X	X	X			
6	TANNERY BROOK DRAIN			1318	IV	N	X	X	X	X	X	X	X			
7	HUNTINGTON AVENUE DRAIN			1335	IV	N	X	X	X	X	X	X	X			
8	DAISY FIELD DRAIN			1400	IV	N	X	X	X	X	X	X	X			
9	CHESTNUT STREET DRAIN			1410	IV	N	X	X	X	X	X	X	X			
10	WILLOW POND ROAD BRIDGE			1430	IV	N	X	X	X	X	X	X	X			
11	VILLAGE BROOK DRAIN	▼	▼	1445	IV	N	X	X	X	X	X	X	X			
						# of Containers:	11	11	11	11	11	→				
						Container Type:*	P	P	P	P	P	P	P			
						Preservative: *	A	A	A	A	D	D	D			

Transfers Accepted By:	Date	Time
Janet M. Kelley	12/14/00	1615

Transfers Relinquished By:		
Kellehan/Courier		

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

Form No.: 01-01

ALPHA ANALYTICAL LABORATORIES
Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65 NY:11148

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.
Address: 1 Cambridge Place
50 Hampshire Street
Cambridge, MA 02139
Attn: Bruce Conklin
Project Number:
Site: MUDDY RIVER

Laboratory Job Number: L0009007
Invoice Number: 42450
Date Received: 06-OCT-00
Date Reported: 16-OCT-00
Delivery Method: Client

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0009007-01	CHESTNUT ST DRAIN	BOSTON BROOKLINE
L0009007-02	WILLOW POND OUTLET	BOSTON BROOKLINE
L0009007-03	MUDDY RIVER @ WILLOW POND BRID	BOSTON BROOKLINE
L0009007-04	DAISY FIELD DRAIN	BOSTON BROOKLINE
L0009007-05	VILLAGE BROOK DRAIN	BOSTON BROOKLINE
L0009007-06	HUNTINGTON AVE DRAIN	BOSTON BROOKLINE
L0009007-07	TANNARY BROOK DRAIN	BOSTON BROOKLINE
L0009007-08	MUDDY RIVER @ BACK BAY	BOSTON BROOKLINE
L0009007-09	MUDDY RIVER @ LONGWOOD BRIDGE	BOSTON BROOKLINE
L0009007-10	LONGWOOD AVE DRAIN	BOSTON BROOKLINE
L0009007-11	EMMANUEL COLLEGE DRAIN	BOSTON BROOKLINE
L0009007-12	BOSTON GATE HOUSE	BOSTON BROOKLINE
L0009007-13	MUDDY RIVER @ AGISSIZ BRIDGE	BOSTON BROOKLINE
L0009007-14	IPS	BOSTON BROOKLINE

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-01
Sample Matrix: CHESTNUT ST DRAIN WATER
Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Turbidity	18.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	22.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	85.	A.P.C.U.	25.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	20.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	5.8	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.177	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.85	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.08	mg/l	0.01	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.03	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	2000	col/100ml	9.0	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	240	MPN/100ml	2.0	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-02
Sample Matrix: WILLOW POND OUTLET WATER
Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 1-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Total Metals				1	3015			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-03 Date Collected: 06-OCT-2000
MUDDY RIVER @ WILLOW POND BR Date Received : 06-OCT-2000
Sample Matrix: WATER Date Reported : 16-OCT-00

Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	12.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	23.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	52.	A.P.C.U.	20.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	19.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	150	mg/l	10.	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.103	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.45	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.29	mg/l	0.02	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.01	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MPN)	>1600	MPN/100ml	2	30	9221E		06-Oct	AB
Coliform, Fecal Strep (MPN)	>1600	MPN/100ml	2	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-04 Date Collected: 06-OCT-2000
DAISY FIELD DRAIN Date Received : 06-OCT-2000
Sample Matrix: WATER Date Reported : 16-OCT-00

Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	11.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	22.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	72.	A.P.C.U.	20.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	40.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	8.6	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	1.29	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	3.1	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.40	mg/l	0.02	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.23	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	22000	col/100ml	100	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	>1600	MPN/100ml	2	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-05
VILLAGE BROOK DRAIN
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory
Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	4.7	NTU	0.20	30	2130B		06-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	18.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	37.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	ND	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.632	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.46	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.13	mg/l	0.01	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.06	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	ND	col/100ml	2.0	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-06
HUNTINGTON AVE DRAIN
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory
Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	170	NTU	0.20	30	2130B		06-Oct	RS
Color, True	19.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	160	A.P.C.U.	100	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	34.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	640	mg/l	25.	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.637	mg/l	0.150	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.71	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	1.0	mg/l	0.05	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.02	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MPN)	>1600	MPN/100ml	2	30	9221E		06-Oct	AB
Coliform, Fecal Strep (MPN)	900	MPN/100ml	2.0	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-07
TANNARY BROOK DRAIN
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Turbidity	14.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	23.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	52.	A.P.C.U.	20.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	20.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	11.	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.246	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	1.1	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.14	mg/l	0.01	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.07	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	6500	col/100ml	100	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	>1600	MPN/100ml	2	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-08
MUDDY RIVER @ BACK BAY
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Total Metals				1	3015			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-09 Date Collected: 06-OCT-2000
MUDDY RIVER @ LONGWOOD BRID Date Received : 06-OCT-2000
Sample Matrix: WATER Date Reported : 16-OCT-00

Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	12.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	56.	A.P.C.U.	20.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	31.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	11.	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.500	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.64	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.15	mg/l	0.01	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.05	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	49.	col/100ml	2.0	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	22.	MPN/100ml	2.0	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-10 Date Collected: 06-OCT-2000
LONGWOOD AVE DRAIN Date Received : 06-OCT-2000
Sample Matrix: WATER Date Reported : 16-OCT-00

Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	11.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	27.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	58.	A.P.C.U.	20.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	31.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	ND	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.380	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	2.6	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.11	mg/l	0.01	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.04	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	1200	col/100ml	9.0	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	>1600	MPN/100ml	2	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-11
EMMANUEL COLLEGE DRAIN
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	34.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	80.	A.P.C.U.	50.	30	2120B		06-Oct	RS
Acidity	2.0	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	16.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	43.	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.195	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.64	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.18	mg/l	0.02	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	0.01	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MF)	2000	col/100ml	9.0	30	9222D		06-Oct	AB
Coliform, Fecal Strep (MPN)	240	MPN/100ml	2.0	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-12
BOSTON GATE HOUSE
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	2.6	NTU	0.20	30	2130B		06-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	24.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	37.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	5.6	mg/l	5.0	30	2540D		13-Oct	DT
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.55	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.04	mg/l	0.01	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MPN)	50.	MPN/100ml	2.0	30	9221E		06-Oct	AB
Coliform, Fecal Strep (MPN)	500	MPN/100ml	2.0	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-13
MUDDY RIVER @ AGISSIZ BRIDGE
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	10.	NTU	0.20	30	2130B		06-Oct	RS
Color, True	23.	A.P.C.U.	5.0	30	2120B		06-Oct	RS
Color, Apparent	72.	A.P.C.U.	20.	30	2120B		06-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Alkalinity, Total	39.	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Solids, Total Suspended	80.	mg/l	10.	30	2540D		13-Oct	DT
Nitrogen, Ammonia	0.093	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Nitrogen, Nitrate/Nitrite	0.55	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Phosphorus, Total	0.27	mg/l	0.02	30	4500P-E		13-Oct	JT
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		06-Oct	JT
Coliform, Fecal (MPN)	1600	MPN/100ml	2.0	30	9221E		06-Oct	AB
Coliform, Fecal Strep (MPN)	>1600	MPN/100ml	2	30	9230B		06-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0009007-14
IPS
Sample Matrix: WATER

Date Collected: 06-OCT-2000
Date Received : 06-OCT-2000
Date Reported : 16-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Total Metals				1	3015			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0009007

Parameter	Value 1	Value 2	RPD	Units
Turbidity for sample(s) 01,03-07,09-13 (L0009007-13, WG67131)				
Turbidity	10.	11.	10	NTU
Color, True for sample(s) 01,03-07,09-13 (L0009007-13, WG67006)				
Color, True	23.	23.	0	A.P.C.U.
Color, Apparent for sample(s) 01,03-07,09-13 (L0009007-13, WG67005)				
Color, Apparent	72.	72.	0	A.P.C.U.
Acidity for sample(s) 01,03-07,09-13 (L0009007-13, WG67313)				
Acidity	ND	ND	NC	mg CaCO3/L
Alkalinity, Total for sample(s) 01,03-07,09-13 (L0009007-13, WG67341)				
Alkalinity, Total	39.	38.	3	mg CaCO3/L
Solids, Total Suspended for sample(s) 01,03-07,09-13 (L0009007-06, WG67251)				
Solids, Total Suspended	640	620	3	mg/l
Nitrogen, Ammonia for sample(s) 01,03-07,09-13 (L0009007-06, WG67270)				
Nitrogen, Ammonia	0.637	0.654	3	mg/l
Nitrogen, Nitrate/Nitrite for sample(s) 01,03-07,09-13 (L0009007-12, WG67116)				
Nitrogen, Nitrate/Nitrite	0.55	0.56	2	mg/l
Phosphorus, Total for sample(s) 01,03-07,09-13 (L0009149-02, WG67326)				
Phosphorus, Total	4.9	4.8	2	mg/l
Phosphorus, Orthophosphate for sample(s) 01,03-07,09-13 (L0009007-04, WG66804)				
Phosphorus, Orthophosphate	0.23	0.23	0	mg/l
Total Metals for sample(s) 02,08,14 (L0008881-04, WG66945)				
Lead, Total	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0009007

Parameter	% Recovery
Turbidity LCS for sample(s) 01,03-07,09-13 (WG67131)	
Turbidity	100
Acidity LCS for sample(s) 01,03-07,09-13 (WG67313)	
Acidity	102
Alkalinity, Total LCS for sample(s) 01,03-07,09-13 (WG67341)	
Alkalinity, Total	102
Nitrogen, Ammonia LCS for sample(s) 01,03-07,09-13 (WG67270)	
Nitrogen, Ammonia	96
Nitrogen, Nitrate/Nitrite LCS for sample(s) 01,03-07,09-13 (WG67116)	
Nitrogen, Nitrate/Nitrite	99
Phosphorus, Total LCS for sample(s) 01,03-07,09-13 (WG67326)	
Phosphorus, Total	101
Phosphorus, Orthophosphate LCS for sample(s) 01,03-07,09-13 (WG66804)	
Phosphorus, Orthophosphate	103
Total Metals LCS for sample(s) 02,08,14 (WG66945)	
Lead, Total	100
Alkalinity, Total SPIKE for sample(s) 01,03-07,09-13 (L0009007-03, WG67341)	
Alkalinity, Total	107
Nitrogen, Ammonia SPIKE for sample(s) 01,03-07,09-13 (L0009007-05, WG67270)	
Nitrogen, Ammonia	99
Nitrogen, Nitrate/Nitrite SPIKE for sample(s) 01,03-07,09-13 (L0009007-05, WG67116)	
Nitrogen, Nitrate/Nitrite	99
Phosphorus, Total SPIKE for sample(s) 01,03-07,09-13 (L0009007-05, WG67326)	
Phosphorus, Total	103
Phosphorus, Orthophosphate SPIKE for sample(s) 01,03-07,09-13 (L0009007-13, WG66804)	
Phosphorus, Orthophosphate	98
Total Metals SPIKE for sample(s) 02,08,14 (L0008881-10, WG66945)	
Lead, Total	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0009007

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Blank Analysis for sample(s) 01,03-07,09-13								
Turbidity	ND	NTU	0.20	30	2130B		06-Oct	RS
Blank Analysis for sample(s) 01,03-07,09-13								
Acidity	ND	mg CaCO3/L	2.0	30	2310B		13-Oct	RS
Blank Analysis for sample(s) 01,03-07,09-13								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		14-Oct	AN
Blank Analysis for sample(s) 01,03-07,09-13								
Solids, Total Suspended	ND	mg/l	5.0	30	2540D		13-Oct	DT
Blank Analysis for sample(s) 01,03-07,09-13								
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		16-Oct	DE
Blank Analysis for sample(s) 01,03-07,09-13								
Nitrogen, Nitrate/Nitrite	ND	mg/l	0.10	30	4500NO3-F		11-Oct	DD
Blank Analysis for sample(s) 01,03-07,09-13								
Phosphorus, Total	ND	mg/l	0.01	30	4500P-E		13-Oct	JT
Blank Analysis for sample(s) 01,03-07,09-13								
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		06-Oct	JT
Blank Analysis for sample(s) 01,04-05,07,09-11								
Coliform, Fecal (MF)	ND	col/100ml	1.0	30	9222D		06-Oct	AB
Blank Analysis for sample(s) 03,06,12-13								
Coliform, Fecal (MPN)	ND	MPN/100ml	2.0	30	9221E		06-Oct	AB
Blank Analysis for sample(s) 01,03-07,09-13								
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30	9230B		06-Oct	AB

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0009007
Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Blank Analysis for sample(s) 02,08,14								
Total Metals				1	3015			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	
1,2-Dichloroethane-d_4	75%	125%	75%	125%	
4-Bromofluorobenzene	75%	125%	75%	125%	
Toluene-d_8	75%	125%	75%	125%	
Dibromofluoromethane	75%	125%	75%	125%	
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	**percent recovery AQ Limits LCL**	**AQ Limits UCL**	**Soil Limits LCL**	**Soil Limits UCL**	**duplicate and/or MSD AQ Limits RPD / Soil Limits RPD**
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds
Trichloroethene	71%	120%	62%	137%	20% 30%
Chlorobenzene	75%	130%	60%	133%	
Benzene	76%	127%	66%	142%	
Toluene	76%	125%	59%	139%	

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	
4-Bromochlorobenzene	70%	110%	70%	120%	
4-Bromofluorobenzene	70%	110%	70%	120%	
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	**percent recovery AQ Limits LCL**	**AQ Limits UCL**	**Soil Limits LCL**	**Soil Limits UCL**	**duplicate and/or MSD AQ Limits RPD / Soil Limits RPD**
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds
Trichloroethene	70%	130%	70%	130%	20% 30%
Chlorobenzene	70%	130%	70%	130%	
Benzene	70%	130%	70%	130%	
Toluene	70%	130%	70%	130%	
Ethylbenzene	70%	130%	70%	130%	

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	
Nitrobenzene-d_5	23%	120%	23%	120%	
Phenol-d_6	10%	120%	10%	120%	
2-Fluorophenol	21%	120%	25%	120%	
2-Fluorobiphenyl	43%	120%	30%	120%	
p-Terphenyl-d_{14}	33%	120%	18%	120%	
2,4,6-Tribromophenol	10%	120%	19%	120%	
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	**percent recovery AQ Limits LCL**	**AQ Limits UCL**	**Soil Limits LCL**	**Soil Limits UCL**	**duplicate and/or MSD AQ Limits RPD / Soil Limits RPD**
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds
Acenaphthene	46%	118%	31%	137%	40% 50%
2,4-Dinitrotoluene	24%	96%	28%	89%	
Pyrene	26%	127%	35%	142%	
N-Nitroso-di-n-propylamine	41%	116%	41%	126%	
1,4-Dichlorobenzene	36%	97%	28%	104%	
Pentachlorophenol	9%	103%	17%	109%	
Phenol	12%	110%	26%	90%	
2-Chlorophenol	27%	123%	25%	102%	
4-Chloro-3-methylphenol	23%	97%	26%	103%	
4-Nitrophenol	10%	80%	11%	114%	

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%
Decachlorobiphenyl	40%	120%	40%	120%

matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate and/or MSD AQ Limits RPD	Soil Limits RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL
2,5-Dibromotoluene	70%	130%	70%	130%

laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL
Chloro-octadecane	40%	140%	40%	140%
ortho-Terphenyl	40%	140%	40%	140%
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%

laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery AQ Limits LCL	AQ Limits UCL	Soil Limits LCL	Soil Limits UCL	duplicate AQ Limits RPD	Soil Limits RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2097

Sheet 1 of 2

ALPHA Job #: 0009037

Date Rec'd in Lab: 10/6/00

Date Due: 10/16

Client Name: CDM - Carol Keslick
Client Address: One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139
Phone #: 617 452 6330 FAX #: 617 452 8330

Project Name: Muddy River
Project Location: Boston Brookline
Project #:
Project Manager: Carol Keslick

Report To: CDM Carol Keslick
Bill To: CDM
One Cambridge Place
PO#: Cambridge MA 02139

☑ Standard TAT
☐ RUSH TAT ____ (# DAYS)
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)
617 452-6330

ANALYSIS REQUEST

ALPHA Lab #	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	Fecal Coliform	Fecal Streptococcus	TSS	Tree Apparent Color	Turbidity	Alkalinity	Acidity	Total Phosphorus / Ortho Phosphorus	Ammonia Nitrogen / Nitrate Nitrogen / Nitrite Nitrogen	Total Lead
9037 1	Chestnut St Drain	SW	10/6/00	9:28	SSC	N	X	X	X	X	X	X	X	X	X	
2	Willow Pond outlet			10:05												X
3	Muddy River @ Willow Pond Bridge			10:05			X	X	X	X	X	X	X	X	X	
4	Dairy field Drain			10:50												
5	Village Brook Drain			10:50												
6	Huntington Ave Drain			11:10												
7	Tannery Brook Drain			11:50												
8	Muddy River @ Back Bay Bird Feeder Rack			1:00												X
9	Muddy River at the Longwood Ave Bridge			1:05			X	X	X	X	X	X	X	X	X	
10	Longwood Ave Drain			1:15												
11	Emerald College Drain			1:40												
	# of Containers:						9	9	9	9	9	9	9	9	9	2
	Container Type: *						B	B	P	P	P	P	P	P	P	P
	Preservative: *						N	N	N	N	N	N	N	D/N	D/N	C

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

Form No.: 01-01

Transfers Accepted By:	Date	Time
Janelle McKellar	10/6/00	1615

Transfers Relinquished By:	Date	Time
Callan / Carol		

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2742

Sheet 2 of 2

ALPHA Job #: 0009037

Date Rec'd in Lab: 10/6/00

Date Due: 10/16

Client Name: CDM - Carol Keslick
Client Address: One Cambridge Place
50 Hampshire St.
Cambridge, MA 02139
Phone #: 617 452 6330 FAX #: 617 452 8330

Project Name: Muddy River
Project Location: Boston Brookline
Project #: 20300
Project Manager: Carol Keslick

Report To: CDM - Carol Keslick
Bill To: CDM
One Cambridge Place
PO#: Cambridge MA 02139

☑ Standard TAT
☐ RUSH TAT ____ (# DAYS)
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)
617 452 6330

ANALYSIS REQUEST

ALPHA Lab #	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	Fecal Coliform	Fecal Streptococcus	TSS	Tree Apparent Color	Turbidity	Alkalinity	Acidity	Total Phosphorus / Ortho Phosphorus	Ammonia Nitrogen / Nitrate Nitrogen / Nitrite Nitrogen	Total Lead
9037 12	Boston Gate House	SW	10/6	210	SSC	N	X	X	X	X	X	X	X	X	X	X
13	Muddy River @ Agassiz Brdg			230			X	X	X	X	X	X	X	X	X	
14	FP5			250			X	X	X	X	X	X	X	X	X	
																X
	# of Containers:						3	3	3	3	3	3	3	3	3	1
	Container Type: *						P	P	P	P	P	P	P	P	P	P
	Preservative: *						N	N	N	N	N	N	N	D/N	D	C

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

Form No.: 01-01

Transfers Accepted By:	Date	Time
Janelle McKellar	10/6/00	1615

Transfers Relinquished By:	Date	Time
Callan / Carol		

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65 NY:11148

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 1 Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Attn: Bruce Conklin

Project Number: 20309

Site: MUDDY RIVER

Laboratory Job Number: L0008881

Invoice Number: 42342

Date Received: 04-OCT-00

Date Reported: 13-OCT-00

Delivery Method: Client

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0008881-01	BOSTON GATE HOUSE	BOSTON/BROOKLINE
L0008881-02	AGASSIZ ROAD BRIDGE	BOSTON/BROOKLINE
L0008881-03	IPSWICH STREET	BOSTON/BROOKLINE
L0008881-04	MUDDY RIVER @ BACK BAY YARD	BOSTON/BROOKLINE
L0008881-05	MUDDY RIVER @ LONGWOOD AVE	BOSTON/BROOKLINE
L0008881-06	LONGWOOD AVENUE DRAIN	BOSTON/BROOKLINE
L0008881-07	TANNERY BROOK DRAIN	BOSTON/BROOKLINE
L0008881-08	VILLAGE BROOK DRAIN	BOSTON/BROOKLINE
L0008881-09	DAISY FIELD DRAIN	BOSTON/BROOKLINE
L0008881-10	WILLOW POND OUTLET	BOSTON/BROOKLINE
L0008881-11	MUDDY RIVER @ WILLOW POND RD	BOSTON/BROOKLINE
L0008881-12	HUNTINGTON AVE	BOSTON/BROOKLINE

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-01
BOSTON GATE HOUSE

Sample Matrix: WATER

Condition of Sample: Satisfactory

Number & Type of Containers: 2-Bacteria,3-Plastic

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	1.2	NTU	0.20	30	2130B		04-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	23.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	35.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	8.8	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	0.47	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.05	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	300	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	30.	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-02
AGASSIZ ROAD BRIDGE
Sample Matrix: WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	3.8	NTU	0.20	30	2130B		04-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	27.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	33.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	20.	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	0.32	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.05	mg/l	0.01	30	4500P-B		10-Oct	JT
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	500	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	21.	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-03
IPSWICH STREET
Sample Matrix: WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Total Metals								
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-04
Sample Matrix: MUDDY RIVER @ BACK BAY YARD
WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory
Field Prep: None

Number & Type of Containers: 1-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Total Metals				1	3015			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-05
Sample Matrix: MUDDY RIVER @ LONGWOOD AVE
WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory
Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	3.9	NTU	0.20	30	2130B		04-Oct	RS
Color, True	17.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	18.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	44.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	ND	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	0.519	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	0.45	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.11	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	0.02	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	ND	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-06
Sample Matrix: LONGWOOD AVENUE DRAIN WATER
Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Turbidity	5.5	NTU	0.20	30	2130B		04-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	22.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	48.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	6.4	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	0.576	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	1.0	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.14	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	0.02	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	2.0	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	2.0	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-07
Sample Matrix: TANNERY BROOK DRAIN WATER
Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00
Condition of Sample: Satisfactory
Field Prep: None
Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Turbidity	19.	NTU	0.20	30	2130B		04-Oct	RS
Color, True	12.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	65.	A.P.C.U.	25.	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	62.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	21.	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	0.622	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	1.7	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.45	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	0.02	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	500	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	80.	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-08
Sample Matrix: VILLAGE BROOK DRAIN WATER
Condition of Sample: Satisfactory
Number & Type of Containers: 2-Bacteria,3-Plastic

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00
Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	3.1	NTU	0.20	30	2130B		04-Oct	RS
Color, True	12.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	16.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	39.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	5.4	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	0.597	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	0.29	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.12	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	0.05	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	ND	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-09
Sample Matrix: DAISY FIELD DRAIN WATER
Condition of Sample: Satisfactory
Number & Type of Containers: 2-Bacteria,3-Plastic

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00
Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	2.1	NTU	0.20	30	2130B		04-Oct	RS
Color, True	8.0	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	18.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	65.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	38.	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	0.157	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	5.8	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.23	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	0.02	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	300	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	300	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-10
WILLOW POND OUTLET
Sample Matrix: WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Total Metals				1	6010			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-11
MUDDY RIVER @ WILLOW POND RD
Sample Matrix: WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	3.5	NTU	0.20	30	2130B		04-Oct	RS
Color, True	12.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	23.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	27.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	6.6	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	0.26	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.02	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	23.	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	240	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L0008881-12
HUNTINGTON AVE
Sample Matrix: WATER

Date Collected: 04-OCT-2000
Date Received : 04-OCT-2000
Date Reported : 13-OCT-00

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Bacteria,3-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Turbidity	4.2	NTU	0.20	30	2130B		04-Oct	RS
Color, True	18.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Color, Apparent	17.	A.P.C.U.	5.0	30	2120B		04-Oct	RS
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Alkalinity, Total	43.	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Solids, Total Suspended	ND	mg/l	5.0	30	2540D		05-Oct	DT
Nitrogen, Ammonia	0.759	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Nitrogen, Nitrate/Nitrite	0.32	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Phosphorus, Total	0.14	mg/l	0.01	30	4500P-E		10-Oct	JT
Phosphorus, Orthophosphate	0.05	mg/l	0.01	30	4500P-E		05-Oct	JT
Coliform, Fecal (MPN)	ND	MPN/100ml	2.0	30	9221E		04-Oct	AB
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30	9230B		04-Oct	AB

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0008881

Parameter	Value 1	Value 2	RPD	Units
Turbidity for sample(s) 01-02,05-09,11-12 (L0008881-12, WG66671)				
Turbidity	4.2	4.1	2	NTU
Color, True for sample(s) 01-02,05-09,11-12 (L0008881-12, WG66630)				
Color, True	18.	18.	0	A.P.C.U.
Color, Apparent for sample(s) 01-02,05-09,11-12 (L0008881-12, WG66629)				
Color, Apparent	17.	17.	0	A.P.C.U.
Acidity for sample(s) 01-02,05-09,11-12 (L0008881-12, WG67083)				
Acidity	ND	ND	NC	mg CaCO3/L
Alkalinity, Total for sample(s) 01-02,05-09,11-12 (L0008881-09, WG66815)				
Alkalinity, Total	88.	89.	1	mg CaCO3/L
Solids, Total Suspended for sample(s) 01-02,05-09,11-12 (L0008881-01, WG66568)				
Solids, Total Suspended	ND	ND	NC	mg/l
Nitrogen, Ammonia for sample(s) 01-02,05-09,11-12 (L0008881-07, WG66898)				
Nitrogen, Ammonia	ND	ND	NC	mg/l
Nitrogen, Nitrate/Nitrite for sample(s) 01-02,05-09,11-12 (L0008881-01, WG66586)				
Nitrogen, Nitrate/Nitrite	0.47	0.47	0	mg/l
Phosphorus, Total for sample(s) 01-02,05-09,11-12 (L0008881-11, WG66911)				
Phosphorus, Total	0.14	0.14	0	mg/l
Phosphorus, Orthophosphate for sample(s) 01-02,05-09,11-12 (L0008881-01, WG66587)				
Phosphorus, Orthophosphate	0.05	0.05	2	mg/l
Total Metals for sample(s) 03-04,10 (L0008881-04, WG66346)				
Lead, Total	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0008881

Parameter	% Recovery
Turbidity LCS for sample(s) 01-02,05-09,11-12 (WG66621)	
Turbidity	100
Acidity LCS for sample(s) 01-02,05-09,11-12 (WG67083)	
Acidity	101
Alkalinity, Total LCS for sample(s) 01-02,05-09,11-12 (WG68919)	
Alkalinity, Total	103
Nitrogen, Ammonia LCS for sample(s) 01-02,05-09,11-12 (WG68868)	
Nitrogen, Ammonia	97
Nitrogen, Nitrate/Nitrite LCS for sample(s) 01-02,05-09,11-12 (WG66526)	
Nitrogen, Nitrate/Nitrite	98
Phosphorus, Total LCS for sample(s) 01-02,05-09,11-12 (WG66931)	
Phosphorus, Total	100
Phosphorus, Orthophosphate LCS for sample(s) 01-02,05-09,11-12 (WG66674)	
Phosphorus, Orthophosphate	101
Total Metals LCS for sample(s) 03-04,10 (WG66945)	
Lead, Total	100
Alkalinity, Total SPIKE for sample(s) 01-02,05-09,11-12 (L0008851-01, WG66915)	
Alkalinity, Total	96
Nitrogen, Ammonia SPIKE for sample(s) 01-02,05-09,11-12 (L0008866-01, WG68868)	
Nitrogen, Ammonia	101
Nitrogen, Nitrate/Nitrite SPIKE for sample(s) 01-02,05-09,11-12 (L0008881-12, WG66526)	
Nitrogen, Nitrate/Nitrite	99
Phosphorus, Total SPIKE for sample(s) 01-02,05-09,11-12 (L0008881-01, WG66931)	
Phosphorus, Total	101
Phosphorus, Orthophosphate SPIKE for sample(s) 01-02,05-09,11-12 (L0008881-02, WG66674)	
Phosphorus, Orthophosphate	99
Total Metals SPIKE for sample(s) 03-04,10 (L0008881-10, WG66945)	
Lead, Total	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0008881

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 01-02,05-09,11-12								
Turbidity	ND	NTU	0.20	30	2130B		04-Oct	RS
Blank Analysis for sample(s) 01-02,05-09,11-12								
Acidity	ND	mg CaCO3/L	2.0	30	2310B		11-Oct	RS
Blank Analysis for sample(s) 01-02,05-09,11-12								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		10-Oct	RS
Blank Analysis for sample(s) 01-02,05-09,11-12								
Solids, Total Suspended	ND	mg/l	5.0	30	2540D		05-Oct	DT
Blank Analysis for sample(s) 01-02,05-09,11-12								
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		11-Oct	DE
Blank Analysis for sample(s) 01-02,05-09,11-12								
Nitrogen, Ammonia	ND	mg/l	0.075	30	4500NH3-BH		12-Oct	DE
Blank Analysis for sample(s) 01-02,05-09,11-12								
Nitrogen, Nitrate/Nitrite	ND	mg/l	0.10	30	4500NO3-F		04-Oct	DD
Blank Analysis for sample(s) 01-02,05-09,11-12								
Phosphorus, Total	ND	mg/l	0.01	30	4500P-E		10-Oct	JT
Blank Analysis for sample(s) 01-02,05-09,11-12								
Phosphorus, Orthophosphate	ND	mg/l	0.01	30	4500P-E		05-Oct	JT
Blank Analysis for sample(s) 01-02,05-09,11-12								
Coliform, Fecal (MPN)	ND	MPN/100ml	2.0	30	9221E		04-Oct	AB
Blank Analysis for sample(s) 01-02,05-09,11-12								
Coliform, Fecal Strep (MPN)	ND	MPN/100ml	2.0	30	9230B		04-Oct	AB

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0008881

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	ID
Blank Analysis for sample(s) 03-04,10								
Total Metals				1	3015			
Lead, Total	ND	mg/l	0.05	1	6010B	10-Oct	12-Oct	RW

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

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We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

ALPHA Analytical Laboratories, Inc.

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CHAIN OF CUSTODY

№ 2748

Sheet 1 of 1

Date Rec'd in Lab: 10-04-00

Client Name: CDM - Carole Keslick
Client Address: One Cambridge Place, 50 Hampshire Street, Cambridge, MA 02139
Phone #: 617 452 6388 FAX #: 617 452 8330

Project Name: Muddy River
Project Location: Boston / Brookline
Project #: 20309
Project Manager: Carole Keslick

Report To: CDM - Carol Keslick
Bill To: CDM, One Cambridge Place, Cambridge MA 02139
PO#: Cambridge MA 02139

☑ Standard TAT
☐ RUSH TAT ____ (# DAYS)
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)
617 452 6330 617 452 8330 (Carole Keslick)

ANALYSIS REQUEST

ALPHA Lab ID	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	Fecal Coliform	Fecal Streptococcus	Total Suspended Solids	True & Apparent Color	Turbidity	Alkalinity	Acidity	Total Phosphorus / Orthophosphorus	Ammonia Nitrogen / Nitrate-Nitrite Nitrogen	Total lead
	Boston Gate House	SW	10/4/00	10:05a	SSC	N	X	X	X	X	X	X	X	X	X	
	Agassiz Road Bridge	"	"	10:30a	"		X	X	X	X	X	X	X	X	X	
	Ipswich Street	"	"	11:30a	"											X
	Muddy River @ Back Bay Yard Treatment Plant	"	"	11:34a	"											X
	Muddy River @ Longwood Avenue Bridge			12:30p	"		X	X	X	X	X	X	X	X	X	
	Longwood Avenue Drain			12:35p	"		X	X	X	X	X	X	X	X	X	
	Tankery Brook Drain			1:30p	"		X	X	X	X	X	X	X	X	X	
	Village Brook Drain			2:15p	"		X	X	X	X	X	X	X	X	X	
	Dairy field Drain			2:35p	"		X	X	X	X	X	X	X	X	X	
	Willow Pond Outlet			2:46p	"		X									X
	Muddy River @ Willow Pond Road Bridge			2:50p	"		X	X	X	X	X	X	X	X	X	
						# of Containers:	8	8	8	8	8	8	8	8	8	3
						Container Type: *	B	B	P	P	P	P	P	P	P	P

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

Transfers Accepted By:	Date	Time
[illegible]	10/4/00	1645

Transfers Relinquished By:
[illegible] / Carter

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

№ 2121

Sheet ____ of ____

Date Rec'd in Lab: 10/4

Client Name: CDM
Client Address:
Phone #: FAX #:

Project Name:
Project Location:
Project #:
Project Manager:

Report To:
Bill To:
PO#:

☐ Standard TAT
☐ RUSH TAT ____ (# DAYS)
☐ FAX Results
☐ State Forms
☐ Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

ALPHA Lab ID	Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	E. coli	E. Strep	TSS	True & apparent color	Turb	Alk	Acidity	Phosphorus	NH_3, NO_3/NO_2	T. Pb
	Huntington Ave		10/4	1350			X	X	X	X	X	X	X	X	X	
						# of Containers:	1	1	1	1	→	→	→	1	1	
						Container Type: *	B	B	P	P	→	→	→	P	P	

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

Transfers Accepted By:	Date	Time
	10/4	1645

Transfers Relinquished By:
[illegible]

CDM

consulting • engineering • construction • operations